Exhibit A-1

Geotechnical Boring Logs and Lab Data

2021 USACE Geotechnical Boring Logs and Lab Data

Project I.D. **ALW00224** Boring Designation **SEL-01-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 8 **SHEETS**

PROJECT Riverbank Stabilization Project, Selma, Alabama		**LAT/LONG COORDINATES** LAT = 32.40606 LONG = -87.02015	
		STATE PLANE COORDINATES X = 2,116,593 Y = 875,493	
DATE OF BORING	***STARTED*** 01-14-21 / ***COMPLETED*** 01-22-21	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** NAVD88
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** 123.0 Feet / ***GROUND WATER*** 98.4 Feet
NAME & TITLE OF FIELD INSPECTOR Mike FitzHarris, Geologist	**NAME OF DRILLER** John Lamar	**MANUFACTURER'S DESIGNATION OF DRILL** CME-75	☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 57	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 100.3 Feet		**TOTAL RECOVERY FOR BORING** 91 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
123.0	0.0									
			(CL) CLAY, lean, low plasticity, medium consistency, mostly clay, some silt, trace fine gravel-sized gravel, trace plant debris, moist, Dark Brown to orangish Brown	73	1		SPT Sampler	At El. 122.5 Ft. Advanced boring with hollow stem auger.	1 2 2	4
			At El. 121.5 Ft., low plasticity, stiff consistency, some silt, trace fine-grained sand-sized quartz, moist, Orangish Brown micaceous	60	2		SPT Sampler		3 4 5	9
			At El. 120.0 Ft., medium consistency, some fine-grained sand-sized quartz, trace fine gravel-sized gravel, Reddish brown	20	3		SPT Sampler		4 3 3	6
			At El. 118.5 Ft., low plasticity, some silt, few fine-grained sand, trace fine gravel-sized gravel	40	4		SPT Sampler		3 2 2	4
			At El. 117.0 Ft., low plasticity, few fine-grained sand-sized quartz, trace fine gravel-sized gravel, dry, Orange reddish brown	93	5		SPT Sampler		2 2 4	6
			At El. 115.5 Ft., low plasticity, stiff consistency, some silt, few fine-grained sand-sized quartz, trace fine gravel-sized gravel, moist, Orange brown with black spots	67	6		SPT Sampler		4 4 5	9
			At El. 114.0 Ft., some fine-grained sand-sized quartz, dry, mottled orange micaceous	80	7		SPT Sampler		4 5	

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,593 Y = 875,493	**ELEVATION TOP OF BORING** 123.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				80	7		SPT Sampler		5	10
				80	8		SPT Sampler		6 7 10	17
111.0	12.0									
109.5	13.5		(ML-CL) very stiff consistency, some fine-grained sand-sized quartz, dry, Orange brown	93	9		SPT Sampler		8 9 7	16
108.0	15.0		(SP-SM) SAND, poorly-graded with silt, low plasticity, stiff consistency, mostly fine-grained sand-sized quartz, some silt, trace clay, dry, Orangish light brown	87	10		SPT Sampler		6 5 6	11
			(SP) SAND, poorly-graded, medium, mostly fine-grained sand-sized quartz, trace clay, trace silt, dry, light brown mottled with light orange	100	11		SPT Sampler		5 6 10	16
			At El. 106.5 Ft., dense, dry, Light brown mottled with light orange and light gray	80	12		SPT Sampler		7 11 12	23
			At El. 105.0 Ft., medium, trace fine gravel-sized gravel, Light gray and orange mottle	80	13		SPT Sampler		6 7 7	14
			At El. 103.5 Ft., loose, mostly fine to medium-grained sand-sized quartz, trace fine gravel-sized gravel, trace silt, dry, Light orangish brown	73	14		SPT Sampler		4 4 4	8
			At El. 102.0 Ft., loose, light tan	53	15		SPT Sampler		3 5 5	10
			At El. 100.2 Ft. brown silty lens	93	16		SPT Sampler		4 6	14

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,593 Y = 875,493	**ELEVATION TOP OF BORING** 123.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				93	16		SPT Sampler		8 8	
				73	17		SPT Sampler		5 6 6	12
			At El. 97.7 Ft., medium, few coarse-grained sand-sized quartz At El. 97.5 Ft., medium, trace coarse-grained sand-sized quartz, Light tan grading to light gray coarse-grained sand intermixed throughout	93	18		SPT Sampler		5 6 10	16
			At El. 96.0 Ft., medium, mostly fine to medium-grained sand-sized quartz, some coarse-grained sand-sized quartz, few fine gravel-sized gravel, wet, Light brown to orangish brown At El. 95.2 Ft. gravel intermixed	93	19		SPT Sampler	At El. 96 Ft. Set 5-ft of 6-inch diameter surface casing; started using drilling mud; advanced boring with fishtail bit.	8 14 9	23
94.5	28.5		(CH) CLAY, fat, high plasticity, hard consistency, mostly clay, trace silt, dry, homogeneous, 10Y 4/1 dark greenish gray calcareous, moist at 28.5, then dry; glauconitic	100	20		SPT Sampler		12 22 24	46
			At El. 92.8 Ft., few fine gravel-sized gravel, moist	100	21		SPT Sampler		17 24 45	69
				100	22		SPT Sampler		9 24 41	65
			At El. 90.0 Ft. The clay in the interval from 28.5 ft to 81 feet BGS alternates between softer, highly plastic to a more dry clay that is plastic when water is added. This is thought to be the Mooreville Chalk Formation.	100	23		SPT Sampler		23 29 42	71
				100	24		SPT Sampler		20 36 50	86
				100	25		SPT Sampler		15 36 42	78

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,593 Y = 875,493	**ELEVATION TOP OF BORING** 123.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
				100	25		SPT Sampler		42		
				100	26		SPT Sampler		22 31 42	73	38
				107	27		SPT Sampler		22 34 50/0.4'	84+	39 40
							Advanced Boring				
				100	28		SPT Sampler		22 29 44	73	41
				100	29		SPT Sampler		16 38 46	84	42 43
				100	30		SPT Sampler		23 35 40	75	44
				100	31		SPT Sampler		23 36 49	85	45 46
				100	32		SPT Sampler		22 35 40	75	47
							Advanced Boring w/ fishtail bit				48 49
				100	33		SPT Sampler	At El. 73.5 Ft. Started 3-ft centers for SPT sampling.	28 35 45	80	50

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 5 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,593 Y = 875,493	**ELEVATION TOP OF BORING** 123.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
									45	
							Advanced Boring w/ fishtail bit			
			At El. 70.5 Ft., trace fine gravel-sized carbonate	100	34		SPT Sampler		29 34 48	82
							Advanced Boring w/ fishtail bit			
				100	35		SPT Sampler		24 38 50/0.3'	88+
			At El. 66.3 Ft. indurated clay nodules				Advanced Boring			
				100	36		SPT Sampler		24 33 35	68
							Advanced Boring w/ fishtail bit			
			At El. 63.0 Ft. trace white-light gray sand-sized shell fragments	100	37		SPT Sampler		22 31 50	81
							Advanced Boring w/ fishtail bit			
				107	38		SPT Sampler		32 41 50/0.4'	91+

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 6 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,593 Y = 875,493	**ELEVATION TOP OF BORING** 123.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring w/ fishtail bit			
				100	39		SPT Sampler		13 31 34	65
							Advanced Boring w/ fishtail bit			
			At El. 53.5 Ft., medium plasticity, little silt	100	40		SPT Sampler		36 50 0/0.0"	50+
							Advanced Boring w/ fishtail bit			
			At El. 51.0 Ft., high plasticity, little silt, trace fine-grained sand-sized shell, 10Y 5/1 greenish gray	100	41		SPT Sampler		19 22 23	45
							Advanced Boring w/ fishtail bit			
			At El. 48.0 Ft., high plasticity, hard consistency moist near 75 feet, then dry down near 76, high plasticity when wetted	100	42		SPT Sampler		21 50	
							Advanced Boring w/ fishtail bit			
45.0	78.0									

65 66 67 68 69 70 71 72 73 74 75 76 77 78

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 7 OF 8 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 2,116,593 Y = 875,493	123.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			(CL) CLAY, lean, medium plasticity, hard consistency, some silt, trace fine-grained sand-sized shell, trace fine-grained sand-sized quartz, dry, 10Y 5/1 greenish gray trace shell fragments near 79.3, glauconitic	100	43		SPT Sampler		40 42 50/0.3'	92+
							Advanced Boring			
			At El. 43.5 Ft., some silt, trace fine-grained sand-sized quartz, trace fine to medium-grained sand-sized carbonate	100	44		SPT Sampler		50/0.2'	
							Advanced Boring w/ fishtail bit			
42.0	81.0									
41.9	81.1		(ML) SILT, inorganic-L, low plasticity, hard consistency, mostly silt, little clay, trace shell, moist, 5GY 4/1 dark greenish gray carbonaceous	100	45		SPT Sampler		19 50/0.3'	
41.8	81.2		WOOD, dark brown 0.1' lens of wood, did not appear to be peat.				Advanced Boring w/ fishtail bit			
40.5	82.5		(ML) SILT, inorganic-L	100	46		SPT Sampler		50/0.2'	
			(ML) SILT, inorganic-L, low plasticity, hard consistency, mostly silt, some fine-grained sand-sized quartz, little clay, trace coarse-grained sand-sized carbonate, moist, 10Y 5/1 greenish gray carbonaceous				Advanced Boring w/ fishtail bit			
39.0	84.0									
			(SP-SM) SAND, poorly-graded with silt, very dense, mostly fine-grained sand-sized quartz, little silt, moist, 10GY 4/1 dark greenish gray glauconitic, Start of Eutaw Formation Sands At El. 38.9 Ft.	100	47		SPT Sampler		60	
							Advanced Boring w/ fishtail bit			
37.5	85.5									
			(SP) SAND, poorly-graded, very dense, mostly fine-grained sand-sized quartz, trace silt, moist, 5GY 5/1 greenish gray glauconitic	100	48		SPT Sampler		69	
							Advanced Boring w/ fishtail bit			
			At El. 36.0 Ft., trace fine to medium-grained sand-sized shell, 10GY 4/1 dark greenish gray	100	49		SPT Sampler		44 50/0.2'	
							Advanced Boring w/ fishtail bit			
			At El. 34.5 Ft., few fine gravel-sized shell, 10GY 5/1 greenish gray	100	50		SPT Sampler		47 50/0.4'	
							Advanced Boring w/ fishtail bit			
				100	51		SPT Sampler		42 50	
			At El. 32.0 Ft., high plasticity, stiff consistency clayey nodule				Advanced Boring w/ fishtail bit			
31.5	91.5									

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 8 OF 8 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 2,116,593 Y = 875,493	123.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			(CH) CLAY, fat, high plasticity, stiff consistency, trace medium to coarse-grained sand-sized carbonate, trace silt, moist, 10GY 4/1 dark greenish gray	100	52				10 10	
30.8	92.2			100	52		SPT Sampler		20 38	58
			(SP-SC) SAND, poorly-graded with clay, very dense, mostly fine-grained sand-sized quartz, moist, 10GY 4/1 dark greenish gray some clay nodules intermixed; glauconitic							
29.5	93.5		At El. 30.0 Ft., high plasticity, hard consistency, very dense, mostly fine-grained sand-sized quartz, moist clay lenses down to 93.5	100	53		SPT Sampler		13 50/0.3'	
							Advanced Boring w/ fishtail bit			
			(SP) SAND, poorly-graded, very dense, mostly fine-grained sand-sized quartz, trace silt, moist							
			At El. 28.5 Ft., high plasticity, very dense, mostly fine-grained sand-sized quartz clay bands up to 0.2' thick	100	54		SPT Sampler		24 37 50/0.2'	87+
							Advanced Boring			
			At El. 27.0 Ft., very dense, mostly fine-grained sand-sized quartz	100	55		SPT Sampler		50/0.3'	
							Advanced Boring w/ fishtail bit			
			At El. 25.5 Ft. trace clayey nodules	100	56		SPT Sampler		17 32 50/0.2'	82+
							Advanced Boring			
			At El. 24.0 Ft., very dense, mostly fine-grained sand-sized quartz, trace silt	100	57		SPT Sampler		18 31 50/0.3'	81+
22.7	100.3									

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. Borehole coordinates were obtained by handheld GPS.
Elevations were estimated from GoogleEarth.

3. Grouted with 10 bags of Type I/II Portland Cement mixed with bentonite slurry

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

92 93 94 95 96 97 98 99 100 101 102 103 104 105

Project I.D. **ALW00224** Boring Designation **SEL-02-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 7 **SHEETS**

PROJECT Riverbank Stabilization Project, Selma, Alabama		**LAT/LONG COORDINATES** LAT = 32.406391 LONG = -87.0196	
		STATE PLANE COORDINATES X = 2,116,762 Y = 875,613	
DATE OF BORING	***STARTED*** 02-19-21 / ***COMPLETED*** 02-22-21	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** NAVD88
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** 128.0 Feet / ***GROUND WATER*** 104.7 Feet
NAME & TITLE OF FIELD INSPECTOR Laura Roebuck, Geologist	**NAME OF DRILLER** John Lamar	**MANUFACTURER'S DESIGNATION OF DRILL** CME-75	☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 1	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 14 / ***UNDISTURBED (UD)*** 2
TOTAL DEPTH OF BORING 80.3 Feet		**TOTAL RECOVERY FOR BORING** 98 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
128.0	0.0									
							Advanced Boring w/ solid stem auger			
123.0	5.0									
122.9	5.1		(SP) SAND, poorly-graded, 10YR 4/6 dark yellowish brown sample collected from end of Shelby tube	100		UD-1	2" I.D. Shelby Tube	At El. 123 Ft. pushed 1st Shelby tube from 5' to 7'		
121.0	7.0									
120.9	7.1		(SP) SAND, poorly-graded, mostly fine-grained sand, trace silt, trace mica, moist, 10YR 5/6 yellowish brown sample collected from end of Shelby tube				Advanced Boring w/ solid stem auger			
118.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION Mobile District			**SHEET** 2 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,762 Y = 875,613	**ELEVATION TOP OF BORING** 128.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
116.5	11.5		(SP) SAND, poorly-graded, 10YR 5/6 yellowish brown shelby tube sample only from 10' to 11.5'	100		UD-2	2" I.D. Shelby Tube	At El. 118 Ft. pushed 2nd Shelby tube from 10' to 11.6'		
116.4	11.6		(SC) SAND, clayey, mostly fine-grained sand, some clay, trace mica, moist, 7.5YR 5/8 strong brown sample from bottom of shelby tube				Advanced Boring w/ hollow stem auger			
113.0	15.0									
112.7	15.3		(CL) CLAY, lean, mostly clay, some fine-grained sand-sized sand, trace mica, moist, 7.5YR 4/6 strong brown	87	1		SPT Sampler	At El. 113 Ft. switched to SPT on 5' centers; encountered water in SPT drive from 15' to 16.5'; sample moist; maybe perched water	4	14
111.7	16.3		(SP-SC) SAND, poorly-graded with clay, mostly sand, few clay, trace mica, moist, 10YR 8/1 white color mottled with yellowish brown		2				6 8	
108.0	20.0						Advanced Boring w/ hollow stem auger			
106.5	21.5		(SP) SAND, poorly-graded, mostly sand, trace mica, dry, 10YR 7/3 very pale brown	87	3		SPT Sampler		3 4 6	10
							Advanced Boring w/ hollow stem auger			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,762 Y = 875,613	**ELEVATION TOP OF BORING** 128.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
103.0	25.0						Advanced Boring w/ hollow stem auger			
102.3	25.7		(SP-SM) SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized sand, few silt, trace clay, trace fine gravel-sized gravel, trace mica, wet, 7.5YR 4/4 brown	87	4 5		SPT Sampler		4 7 12	19
101.5	26.5		(SP) SAND, poorly-graded, mostly fine to coarse-grained sand-sized sand, little fine to medium gravel-sized gravel, trace silt, trace mica, trace clay, wet, 10YR 4/6 dark yellowish brown encountered water, color mottled with strong brown				Advanced Boring w/ hollow stem auger			
98.0	30.0		(CL) CLAY, lean, mostly clay, trace silt, trace mica, dry, 10Y 4/1 dark greenish gray	100	6		SPT Sampler	At El. 97 Ft. set 32' of 6" casing to depth 31'	6 25 40	65
96.5	31.5						Advanced Boring w/ hollow stem auger			
93.0	35.0		(CL) CLAY, lean, moist, 10Y 4/1 dark greenish gray	100	BOX 1	RQD 86	Pull-1 4 x 5-1/2" DT = 27 mins HP = 225 psi DFR = 100 %	At El. 93 Ft. switched to 4" x 5' core barrel		

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,762 Y = 875,613	**ELEVATION TOP OF BORING** 128.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
88.0	40.0			100	BOX 1	RQD 86	Pull-1 4 x 5-1/2" DT = 27 mins HP = 225 psi DFR = 100 %			
83.0	45.0						Advanced Boring w/ fishtail bit			
81.5	46.5		(CL) CLAY, lean, mostly clay, little silt, trace glauconite, moist, 10Y 4/1 dark greenish gray	100	7		SPT Sampler	At El. 83 Ft. switched to SPT on 5' centers	22 32 41	73
78.0	50.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, little silt, trace glauconite, trace shell fragments, moist, 10Y 4/1 dark greenish gray	100	8		SPT Sampler		17 37	

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 5 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,762 Y = 875,613	**ELEVATION TOP OF BORING** 128.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
76.5	51.5			100	8		SPT Sampler		37 50	87	51
73.0	55.0						Advanced Boring w/ fishtail bit				52 53 54 55
71.5	56.5		(CL) CLAY, lean, mostly clay, little silt, trace glauconite, trace shell fragments, moist, 10Y 4/1 dark greenish gray	100	9		SPT Sampler		25 27 46	73	56
68.0	60.0						Advanced Boring w/ fishtail bit				57 58 59 60
66.5	61.5		(CL) CLAY, lean, mostly clay, little silt, trace shell fragments, moist, 10Y 4/1 dark greenish gray	100	10		SPT Sampler		22 39 41	80	61
							Advanced Boring w/ fishtail bit				62 63 64

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 6 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,762 Y = 875,613	**ELEVATION TOP OF BORING** 128.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
63.0	65.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, little silt, trace shell fragments, moist, 10Y 4/1 dark greenish gray	100	11		SPT Sampler		36 50	
62.0	66.0									
							Advanced Boring w/ fishtail bit			
58.0	70.0									
			(CL) CLAY, lean, mostly clay, little silt, trace glauconite, trace shell fragments, dry, 10Y 4/1 dark greenish gray	100	12		SPT Sampler		20 22 22	44
56.5	71.5									
							Advanced Boring w/ fishtail bit			
53.0	75.0									
			(CL) CLAY, lean, mostly clay, some silt, dry, 10Y 4/1 dark greenish gray	100	13		SPT Sampler		30 50/0.4'	
52.1	75.9									
							Advanced Boring w/ fishtail bit			

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 7 OF 7 SHEETS
Mobile District		

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 2,116,762 Y = 875,613	128.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring w/ fishtail bit			
48.0	80.0									
47.7	80.3		(ML) SILT, inorganic-L, mostly silt, few clay, trace fine-grained sand-sized sand, trace glauconite, dry, 10Y 4/1 dark greenish gray color mottled with greenish gray	100	14		SPT Sampler		50/0.3"	
							140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. Borehole was tremied grouted with 15 bags of Portland Type I/II cement

3. RQD does not apply because formation is not rock; it is hard clay.

4. Borehole coordinates were obtained by handheld GPS.
Elevations were estimated from GoogleEarth.

DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

Project I.D. **ALW00224** Boring Designation **SEL-03-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 8 **SHEETS**

PROJECT
Riverbank Stabilization Project
Selma, Alabama

LAT/LONG COORDINATES LAT = 32.40625 LONG = -87.01921

STATE PLANE COORDINATES X = 2,116,883 Y = 875,563

DATE OF BORING	***STARTED***	***COMPLETED***
	01-23-21	02-01-21

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. ***HORIZ.*** NAD83 ***VERT.*** NAVD88

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS ***TOP OF BORING*** 116.0 Feet ***GROUND WATER*** 97.9 Feet

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
Mike FitzHarris, Geologist	John Lamar

MANUFACTURER'S DESIGNATION OF DRILL CME-75 ☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 3

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES ***DISTURBED*** 29 ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 100.4 Feet

TOTAL RECOVERY FOR BORING 91 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
116.0	0.0									
115.2	0.8		CONCRETE	40	1		SPT Sampler	At El. 116 Ft. Used a short 4"x5" core barrel to core through the concrete of the driveway that the drill rig was set up on in order to gain access to the formations below. Reamed out the hole in the concrete with a 6-inch auger with cutter teeth. Switched to SPT.	0 1 5	6
114.5	1.5		(SP) SAND, poorly-graded, loose, mostly fine-grained sand-sized quartz, trace silt, trace fine gravel-sized gravel, moist, Light Brown							
112.2	3.8		(SP-SM) SAND, poorly-graded with silt, medium, mostly fine-grained sand-sized quartz, few silt, trace fine gravel-sized gravel, trace clay, moist, Brown trace clayey nodules	60	2		SPT Sampler		6 8 5	13
109.4	6.6		(SC) SAND, clayey, low plasticity, stiff consistency, medium, mostly fine-grained sand-sized quartz, some clay, moist, Orangish brown mottled with black At El. 111.5 Ft., soft consistency, very loose, orangish brown	87	3		SPT Sampler		5 6 5	11
				87	4		SPT Sampler		0 1 2	3
			(SP) SAND, poorly-graded, loose, mostly fine-grained sand-sized quartz, trace silt, moist, Light Orange	93	5		SPT Sampler		1 2 3	5
			At El. 108.5 Ft., dry, Light Orange with orangish brown mottling	80	6		SPT Sampler		3 5 4	9
			At El. 107.0 Ft., Light tan	87	7		SPT Sampler		3 4	

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 2 OF 8 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 2,116,883 Y = 875,563	116.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				87	7		SPT Sampler		5	9
			At El. 105.5 Ft., medium, grades to light orange	87	8		SPT Sampler		4 6 6	12
			At El. 104.0 Ft., loose, trace coarse-grained sand-sized quartz At El. 103.8 Ft., gray band	87	9		SPT Sampler		4 5 5	10
			At El. 102.5 Ft., medium	80	10		SPT Sampler		5 6 7	13
				80	11		SPT Sampler		6 7 8	15
			At El. 99.5 Ft., moist	80	12		SPT Sampler		5 6 7	13
▼			At El. 98.0 Ft., medium, mostly fine to medium-grained sand-sized quartz, few fine gravel-sized gravel, wet, pale brown	73	13		SPT Sampler		5 10 12	22
▽			At El. 96.6 Ft. trace fine gravel intermixed	93	14		SPT Sampler		6 9 14	23
94.5	21.5		From El. 95.6 to 95.1 Ft. trace fine gravel intermixed							
93.5	22.5		(CL) CLAY, lean, low plasticity, medium consistency, little silt, moist, orangish brown calcareous	80	15		SPT Sampler	At El. 95 Ft. Set 5 feet of 6-inch diameter surface casing and set up mud pan.	4 3 2	5
			(CL) CLAY, lean, medium plasticity, hard consistency, mostly clay, some silt, moist, 10Y 5/1 greenish gray calcareous, indurated lenses throughout the interval	100	16		SPT Sampler		5 18	52

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
				100	16		SPT Sampler		34 34		24
			At El. 92.0 Ft., 10Y 4/1 dark greenish gray	100	17		SPT Sampler		22 30 38	68	25
				100	18		SPT Sampler		12 25 36	61	26
			At El. 89.0 Ft., 10Y 5/1 greenish gray	100	19		SPT Sampler		25 34 46	80	27 28
				100	20		SPT Sampler		20 32 38	70	29
86.0	30.0		At El. 86.5 Ft. mineralized fossil (possibly a crinoid)								30
			(CL) CLAY, lean, moist, blocky, 10Y 4/1 dark greenish gray	100	BOX	RQD 100	Pull-1 4 x 5-1/2" Carbide Bit DT = 32 mins HP = 150 psi DFR = 100 %	At El. 86 Ft. Switched to 4"x 5" core barrel with carbide, bottom-discharge bit. Added 2 5-ft sections of 6-inch diameter surface casing because of leakage from the borehole while reaming out the hole.			31
			At El. 84.0 Ft., low plasticity, little silt	100	BOX 2	RQD 79	Pull-2 4 x 5-1/2" Carbide Bit DT = 60 mins HP = 150 psi DFR = 100 %				32 33 34 35 36 37

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
78.6	37.4									
							Advanced Boring w/ fishtail bit			
74.0	42.0									
			(CL) CLAY, lean, hard consistency, very dense, moist, 10Y 4/1 dark greenish gray	100	21		SPT Sampler	At El. 74 Ft. Switched to SPT on 5' centers	19 31 44	75
72.5	43.5									
							Advanced Boring w/ fishtail bit			
69.0	47.0									
			(CL) CLAY, lean, moist, 10Y 4/1 dark greenish gray	100	22		SPT Sampler		19 24 40	64
67.5	48.5									
							Advanced Boring w/ fishtail bit			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 5 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
64.0	52.0						Advanced Boring w/ fishtail bit			
59.0	57.0		(CL) CLAY, lean, moist, 10Y 4/1 dark greenish gray intact core 52' - 57' ; mechanical break @ 56.7 due to handling	100	BOX 3	RQD 94	Pull-3 4 x 5-1/2" DT = 57 mins HP = 150 psi DFR = 100 %	At El. 64 Ft. Switched to 4" x 5" core barrel with carbide, bottom-discharge bit.		
54.0	62.0						Advanced Boring w/ fishtail bit			
52.5	63.5		(CL) CLAY, lean, moist, 10Y 4/1 dark greenish gray	100	23		SPT Sampler	At El. 54 Ft. Switched to SPT on 5' centers	31 39 43	82
							Advanced Boring w/ fishtail bit			

51 52 53 54 55 56 57 58 59 60 61 62 63 64

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 6 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
49.0	67.0						Advanced Boring w/ fishtail bit			
48.2	67.8		(CL) CLAY, lean, dry, 10Y 4/1 dark greenish gray	100	24		SPT Sampler		43 50/0.3'	
44.0	72.0						Advanced Boring w/ fishtail bit			
43.0	73.0		(CL) CLAY, lean, mostly clay, little shell fragments, 10Y 4/1 dark greenish gray	100	BOX 4	RQD 97	Pull-4 4 x 5-1/2" DT = 39 mins HP = 150 psi DFR = 100 %	At El. 44 Ft. Switched to 4" x 5" core barrel with carbide, bottom-discharge bit. Coring advanced very rapidly at 75.8'. Stopped coring at 75.8. Probably in Eutaw Fm.		
41.2	74.8		LIMESTONE, intact							
			At El. 41.3 Ft.							
40.4	75.6		(CL) CLAY, lean, mostly clay, little shell fragments, moist							
							Advanced Boring w/ fishtail bit			

65 66 67 68 69 70 71 72 73 74 75 76 77 78

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 7 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
35.0	81.0						Advanced Boring w/ fishtail bit			
34.1	81.9		(SP) SAND, poorly-graded, hard consistency, very dense, mostly fine-grained sand, trace silt, trace shell fragments, moist, 5GY 5/1 greenish gray	89	25		SPT Sampler	At El. 35 Ft. Switched to SPT on 5' centers	27 50/0.4'	
30.0	86.0						Advanced Boring w/ fishtail bit			
29.7	86.3		(SP) SAND, poorly-graded, moist, 5GY 4/1 dark greenish gray	100	26		SPT Sampler		50/0.3'	
25.0	91.0						Advanced Boring w/ fishtail bit			
			(SP-SM) SAND, poorly-graded with silt, hard consistency, very dense, mostly fine-grained	100	27		SPT Sampler		17	

78 79 80 81 82 83 84 85 86 87 88 89 90 91

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 8 **OF** 8 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,883 Y = 875,563	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
23.7	92.3		sand, trace silt, moist, 10GY 3/1 very dark greenish gray glauconitic	100	27		SPT Sampler		30 30 50/0.3"	80+	92
20.0	96.0						Advanced Boring w/ fishtail bit				93 94 95
19.1	96.9		(SP-SM) SAND, poorly-graded with silt, mostly fine-grained sand-sized sand, trace silt, moist, 10GY 3/1 very dark greenish gray glauconitic	100	28		SPT Sampler		25 50/0.4"		96
16.0	100.0						Advanced Boring w/ fishtail bit				97 98 99
15.6	100.4		(SP) SAND, poorly-graded, hard consistency, very dense, mostly fine-grained sand, trace silt, trace clay, moist, 10GY 3/1 very dark greenish gray glauconitic	100	29		SPT Sampler		50/0.4"		100
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Borehole was tremie grouted with 10 bags of Type I/II Portland cement on 02/02/2021 3. RQD does not apply because formation is not rock; it is hard clay. 4. Borehole coordinates were obtained by handheld GPS. Elevations were estimated from GoogleEarth. 5. Grouted with 10 bags of Portland Type I/II cement				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		101 102 103 104 105

Project I.D. **ALW00224** Boring Designation **SEL-04-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 7 **SHEETS**

PROJECT
Riverbank Stabilization Project
Selma, Alabama

LAT/LONG COORDINATES LAT = 32.40652 LONG = -87.01901

STATE PLANE COORDINATES X = 2,116,961 Y = 875,662

DATE OF BORING	***STARTED***	***COMPLETED***
	02-03-21	02-05-21

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. ***HORIZ.*** NAD83 ***VERT.*** NAVD88

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS ***TOP OF BORING*** 132.0 Feet ***GROUND WATER*** 109.5 Feet

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
Laura Roebuck, Geologist	John Lamar

MANUFACTURER'S DESIGNATION OF DRILL CME-75 ☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 1

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES ***DISTURBED*** 13 ***UNDISTURBED (UD)*** 1

TOTAL DEPTH OF BORING 80.3 Feet

TOTAL RECOVERY FOR BORING 96 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
132.0	0.0									
							Advanced Boring w/ auger	At El. 132 Ft. advance boring with 8" flight auger to depth 5'		
127.0	5.0		(SP-SC) SAND, poorly-graded with clay, mostly fine-grained sand, few clay, trace silt, trace shell fragments, moist, 2.5YR 3/3 dark reddish brown shelby tube; see lab results	100		UD-1	2" I.D. Shelby Tube	At El. 127 Ft. switched to pushing Shelby tube from 5' to 7'. Push time = 8 seconds @ 175 psi.		
125.0	7.0						Advanced Boring w/ hollow stem auger			
122.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
120.5	11.5		(SP-SC) SAND, poorly-graded with clay, mostly fine to medium-grained sand, trace clay, trace fine gravel-sized gravel, dry, 2.5YR 3/3 dark reddish brown	100	1		SPT Sampler	At El. 122 Ft. switched to SPT on 5' centers	2 2 2	4
117.0	15.0						Advanced Boring w/ hollow stem auger			
115.5	16.5		(SP-SC) SAND, poorly-graded with clay, discontinue	100	2		SPT Sampler		2 3 4	7
112.0	20.0						Advanced Boring w/ hollow stem auger			
110.5	21.5		(SP) SAND, poorly-graded, mostly fine to medium-grained sand, dry, 7.5YR 5/6 strong brown trace of mica	93	3		SPT Sampler		6 12 11	23
▼							Advanced Boring w/ hollow stem auger			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
107.0	25.0						Advanced Boring w/ hollow stem auger			
105.5	26.5		(SP) SAND, poorly-graded, mostly coarse-grained sand, some fine to coarse gravel-sized gravel, wet, 7.5YR 4/6 strong brown	87	4		SPT Sampler		7 8 10	18
102.0	30.0						Advanced Boring w/ hollow stem auger	At El. 105 Ft. set 6" casing to depth 27' At El. 104 Ft. after setting casing, cleaned out hole to depth 35' with 5.5" tricone roller rock bit		
100.5	31.5		(ML) SILT, inorganic-L, mostly silt, some clay, dry, 10Y 4/1 dark greenish gray	67	5		SPT Sampler		9 13 33	46
97.0	35.0						Advanced Boring w/ tricone roller bit			
			(CL) CLAY, lean, 10Y 3/1 very dark greenish gray	96	BOX 1	RQD 92	Pull-1 4 x 5-1/2" DT = 45 mins HP = 150 psi DFR = 100 %	At El. 97 Ft. switched to 4 x 5 core barrel and cored 5 feet		

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
92.0	40.0			96	BOX 1	RQD 92	Pull-1 4 x 5-1/2" DT = 45 mins HP = 150 psi DFR = 100 %			
87.0	45.0						Advanced Boring w/ fishtail bit			
85.5	46.5		(CL) CLAY, lean, mostly clay, trace shell fragments, trace glauconite, moist, 10Y 3/1 very dark greenish gray	100	6		SPT Sampler	At El. 87 Ft. switched to SPT on 5' centers	16 32 40	72
82.0	50.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, trace shell fragments, trace glauconite, dry, 10Y 3/1 very dark greenish gray	100	7		SPT Sampler		23 29	

38 39 40 41 42 43 44 45 46 47 48 49 50

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 5 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
80.5	51.5			100	7		SPT Sampler		29 49	78	51
77.0	55.0						Advanced Boring w/ fishtail bit				52 53 54 55
75.5	56.5		(CL) CLAY, lean, mostly clay, trace shell fragments, dry, 10Y 2.5/1 greenish black	100	8		SPT Sampler		18 33 42	75	56
72.0	60.0						Advanced Boring w/ fishtail bit				57 58 59 60
71.1	60.9		(CL) CLAY, lean, mostly clay, trace shell fragments, dry, 10Y 3/1 very dark greenish gray	100	9		SPT Sampler		24 50/0.4"		61
							Advanced Boring w/ fishtail bit				62 63 64

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 6 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
67.0	65.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, trace shell fragments, moist, 10Y 3/1 very dark greenish gray	100	10		SPT Sampler		29 35 50	85
65.5	66.5									
62.0	70.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, trace shell fragments, moist, 10Y 4/1 dark greenish gray pyritized crinoid stem fragmentsx 2, sz 0.05' x 0.02' & 0.08' x 0.03'	100	11		SPT Sampler		27 30 30	60
60.5	71.5									
57.0	75.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, trace glauconite, dry, 10Y 4/1 dark greenish gray	100	12		SPT Sampler		32 50/0.4'	
56.1	75.9									
							Advanced Boring w/ fishtail bit			

DRILLING LOG (Cont. Sheet)

INSTALLATION Mobile District			**SHEET** 7 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,116,961 Y = 875,662	**ELEVATION TOP OF BORING** 132.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
52.0	80.0						Advanced Boring w/ fishtail bit	At El. 54 Ft. encountered change in material from clay to silt detected by driller due to change in drilling action		
51.7	80.3		(ML) SILT, inorganic-L, mostly silt, some fine-grained sand-sized sand, moist, 5GY 4/1 dark greenish gray encountered ML @ approx. 78' during advancement to d. 80'	100	13		SPT Sampler		50/0.3"	
							140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. Borehole was tremie grouted with 10 bags of cement on 2/6/2021

3. RQD does not apply because formation is not rock; it is hard clay.

4. Borehole coordinates were obtained by handheld GPS.
Elevations were estimated from GoogleEarth.

5. Grouted with 10 bags of Portland Type 1/11 cement

DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

78 79 80 81 82 83 84 85 86 87 88 89 90 91

Project I.D. **ALW00224** Boring Designation **SEL-05-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 7 **SHEETS**

PROJECT Riverbank Stabilization Project, Selma, Alabama		**LAT/LONG COORDINATES** LAT = 32.40674 LONG = -87.01862	
		STATE PLANE COORDINATES X = 2,117,064 Y = 875,742	
DATE OF BORING	***STARTED*** 02-09-21 / ***COMPLETED*** 02-12-21	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** NAVD88
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** 130.0 Feet / ***GROUND WATER*** 106.8 Feet
NAME & TITLE OF FIELD INSPECTOR Laura Roebuck, Geologist	**NAME OF DRILLER** John Lamar	**MANUFACTURER'S DESIGNATION OF DRILL** CME-75	☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 2	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 12	***UNDISTURBED (UD)*** 1
TOTAL DEPTH OF BORING 75.8 Feet		**TOTAL RECOVERY FOR BORING** 93 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
130.0	0.0									
							Advanced Boring w/ auger	At El. 130 Ft. advance boring with 8" flight auger to depth 5'		
125.0	5.0		(CL) CLAY, lean, mostly clay, little fine-grained sand, trace silt, moist, 2.5YR 4/6 red , sample from flight auger at depth 5', color mottled with dark reddish brown	100		UD-1	2" I.D. Shelby Tube	At El. 125 Ft. switched to pushing Shelby tube from 5' to 7'. Push time = 8 seconds @ 150 psi.		
123.0	7.0		At El. 123.1 Ft., mostly clay, some fine-grained sand, moist , sample from end of Shelby tube at depth 7', discontinue mottled color							
							Advanced Boring w/ hollow stem auger			
120.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

Boring Designation **SEL-05-21**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
119.4	10.6		(CL) CLAY, lean, mostly clay, some fine-grained sand, moist, 2.5YR 4/6 red		1			At El. 120 Ft. switched to SPT on 5' centers	2	
118.5	11.5		(SP) SAND, poorly-graded, mostly fine-grained sand, trace silt, moist, 5YR 5/6 yellowish red	100	2		SPT Sampler		3 5	8
115.0	15.0						Advanced Boring w/ hollow stem auger			
113.5	16.5		(SP) SAND, poorly-graded, mostly fine-grained sand, trace silt, trace clay, moist, 7.5YR 6/6 reddish yellow mottled with pale brown	100	3		SPT Sampler		5 6 7	13
110.0	20.0						Advanced Boring w/ hollow stem auger			
108.5	21.5		(SP) SAND, poorly-graded, mostly fine-grained sand, trace silt, trace clay, moist, 7.5YR 6/6 reddish yellow mottled with pale brown	100	4		SPT Sampler		5 7 9	16
▼							Advanced Boring w/ hollow stem auger			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
105.0 ▽	25.0						Advanced Boring w/ hollow stem auger			
103.5	26.5		(SP) SAND, poorly-graded, mostly fine to coarse-grained sand, some fine to coarse-grained gravel, wet, 10YR 5/4 yellowish brown	47	5		SPT Sampler		8 6 12	18
100.0	30.0						Advanced Boring w/ hollow stem auger			
99.6	30.4		(SP) SAND, poorly-graded, mostly fine to coarse-grained sand, trace fine to coarse-grained gravel, trace silt, wet, 10YR 4/3 brown	73	6 7		SPT Sampler		8 12 22	34
98.5	31.5		(CL) CLAY, lean, mostly clay, trace silt, trace mica, dry, 10Y 4/1 dark greenish gray							
95.0	35.0						Advanced Boring w/ hollow stem auger	At El. 98 Ft. set 6" casing to depth 32'		
93.5	36.5		(CL) CLAY, lean, mostly clay, trace silt, trace mica, dry, 10Y 4/1 dark greenish gray	100	8		SPT Sampler		7 22 35	57
							Advanced Boring w/ hollow stem auger	At El. 93.5 Ft. after spooning to 36.5', cleaned		

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
90.0	40.0						Advanced Boring w/ hollow stem auger	out hole to depth 40' with 5.5' hollow stem auger		
85.9	44.1		(CL) CLAY, lean, mostly clay, moist, 10Y 4/1 dark greenish gray lots of fn to coarse gravel fall in on top of core barrel	100	BOX 1	RQD 86	Pull-1 4 x 5-1/2" DT = 35 mins DFR = 100 %	At El. 90 Ft. after setting casing, cleaned out hole to depth 40' with 5.5" tricone roller rock bit then cored from 40' to 44.1' with 4 x 5 core barrel		
80.0	50.0						Advanced Boring w/ fishtail bit			
			(CL) CLAY, lean, mostly clay, little silt, moist, 5GY 4/1 dark greenish gray	73	9		SPT Sampler	At El. 80 Ft. switched to SPT	25 34	

38 39 40 41 42 43 44 45 46 47 48 49 50

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 5 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
78.5	51.5			73	9		SPT Sampler		34 50	84	51
75.0	55.0						Advanced Boring w/ hollow stem auger				52 53 54
70.8	59.2		(CL) CLAY, lean, mostly clay, trace shell fragments, moist, N 4/ dark gray From El. 74.0 to 73.9 Ft. pyrite fragment	95	BOX 2	RQD 95	Pull-2 4 x 5-1/2" DT = 45 mins DFR = 100 %	At El. 75 Ft. switched to coring; cored from 55' to 59.2'			55 56 57 58 59
							Advanced Boring w/ fishtail bit				60 61 62 63 64

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 6 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
65.0	65.0						Advanced Boring w/ fishtail bit			
64.0	66.0		(CL) CLAY, lean, mostly clay, trace shell fragments, trace silt, trace fine-grained sand, dry, 10Y 4/1 dark greenish gray	100	10		SPT Sampler	At El. 65 Ft. switched to SPT on 5' centers	28 50	
60.0	70.0						Advanced Boring w/ fishtail bit			
58.5	71.5		(CL) CLAY, lean, mostly clay, trace shell fragments, dry, 10Y 4/1 dark greenish gray	100	11		SPT Sampler		20 25 25	50
55.0	75.0						Advanced Boring w/ fishtail bit			
54.2	75.8		(ML) SILT, inorganic-L, mostly silt, trace shell fragments, trace fine-grained sand, trace clay, dry, 10Y 4/1 dark greenish gray	100	12		SPT Sampler		35 50/0.3'	
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Borehole was tremied grouted with 12 bags of Portland Type I/II cement on 2/13/2021.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). DT = Drill Time. DFR = Drill		

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 7 **OF** 7 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,064 Y = 875,742	**ELEVATION TOP OF BORING** 130.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			3. RQD does not apply because formation is not rock; it is hard clay. 4. Borehole coordinates were obtained by handheld GPS. Elevations were estimated from GoogleEarth. 5. Grouted with 12 bags of Portland Type 1/11 cement				Fluid Return.			

78 79 80 81 82 83 84 85 86 87 88 89 90 91

Project I.D. **ALW00224** Boring Designation **SEL-06-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT
Riverbank Stabilization Project
Selma, Alabama

LAT/LONG COORDINATES LAT = 32.40644 LONG = -87.017944

STATE PLANE COORDINATES X = 2,117,273 Y = 875,634

DATE OF BORING	***STARTED***	***COMPLETED***
	01-13-21	01-14-21

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. ***HORIZ.*** NAD83 ***VERT.*** NAVD88

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS ***TOP OF BORING*** 116.0 Feet ***GROUND WATER*** 99.5 Feet

NAME & TITLE OF FIELD INSPECTOR Mike FitzHarris, Geologist

NAME OF DRILLER John Lamar

MANUFACTURER'S DESIGNATION OF DRILL CME-75 ☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES ***DISTURBED*** 14 ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 19.5 Feet

TOTAL RECOVERY FOR BORING 83 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
116.0	0.0									
			(SM) SAND, silty, loose, mostly fine-grained sand-sized quartz, some silt, little clay, trace subrounded fine gravel-sized gravel, trace plant debris, moist, Dark brown to mottled organic odor	73	1		SPT Sampler		1 3 4	7
114.5	1.5									
			(ML) SILT, inorganic-L, medium consistency, mostly silt, some clay, few fine-grained sand-sized quartz, trace coarse-grained sand-sized quartz, trace plant debris, moist, Dark brown mottled trace sand-sized carbonate pieces with strong HCl reaction	60	2A 2B		SPT Sampler		2 3 3	6
113.8	2.2									
			(SP) SAND, poorly-graded, loose, mostly fine-grained sand-sized quartz, few fines, trace fine gravel-sized gravel, moist, Orangy brown At El. 113.0 Ft. small clayey nodules intermixed throughout interval; calcareous coarse sand sized lumps	87	3		SPT Sampler		3 2 2	4
111.5	4.5		At El. 111.8 Ft. clayey							
			(CL) CLAY, lean, low plasticity, medium consistency, mostly clay, little silt, little fine-grained sand-sized quartz, moist, mottled orange, light brown and light gray	100	4		SPT Sampler		3 2 2	4
				60	5		SPT Sampler		2 2 2	4
			At El. 108.5 Ft., medium plasticity, medium consistency, trace fine gravel-sized gravel, trace silt, trace fine-grained sand-sized quartz, moist, mottled, dark brown, orange, and light gray	87	6		SPT Sampler		2 2 4	6
				100	7		SPT Sampler		3 3	
106.2	9.8									

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,273 Y = 875,634	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
105.5	10.5		(SP-SM) SAND, poorly-graded with silt, loose, mostly fine-grained sand-sized quartz, little silt, moist, light brown to light orange micaceous	100	7		SPT Sampler		4	7
			(SP) SAND, poorly-graded, loose, mostly fine-grained sand-sized quartz, trace silt, dry, light brown micaceous	93	8		SPT Sampler		3 3 5	8
			At El. 103.5 Ft. clayey nodule	80	9		SPT Sampler		3 4 4	8
			At El. 102.5 Ft., medium	87	10		SPT Sampler		3 5 7	12
			At El. 101.0 Ft., medium, mostly medium to coarse-grained sand-sized quartz, trace silt	87	11		SPT Sampler		5 5 8	13
			At El. 99.6 Ft., trace coarse-grained sand-sized quartz, trace fine gravel-sized quartz, moist At El. 99.5 Ft., little fine gravel-sized quartz, wet	87	12		SPT Sampler		8 9 7	16
			At El. 98.0 Ft., mostly medium-grained sand-sized quartz, some fine gravel-sized quartz	80	13		SPT Sampler		4 6 8	14
96.5	19.5		At El. 97.1 Ft., medium, mostly fine to medium-grained sand-sized quartz, trace silt, trace fine gravel-sized quartz, wet, petroleum odor, dark gray				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. Boring was terminated at 16.5' BGS because a petroleum odor was identified in the SPT sample from 18.0 to 19.5 feet. A water sample was collected with a bailer approximately 20 hours later and it contained a light sheen and petroleum odor. The SPT sample from 16.5 to 18.0 feet did not contain a petroleum odor.

3. Borehole coordinates were obtained by handheld GPS.

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,273 Y = 875,634	**ELEVATION TOP OF BORING** 116.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			Elevations were estimated from GoogleEarth. 4. Grouted with 2.5 bags of Type I/II Portland cement.							

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. **ALW00224** Boring Designation **SEL-07-21**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 6 **SHEETS**

PROJECT Riverbank Stabilization Project, Selma, Alabama		**LAT/LONG COORDINATES**	LAT = 32.406587 LONG = -87.01656
		STATE PLANE COORDINATES	X = 2,117,273 Y = 875,687
DATE OF BORING	**STARTED** 03-12-21 / **COMPLETED** 03-18-21	**COORDINATE SYSTEM/DATUM/UNITS**	State Plane - Alabama West - U.S. Survey Ft. / **HORIZ.** NAD83 / **VERT.** NAVD88
DRILLING AGENCY	Corps of Engineers - CESAM	**ELEVATIONS**	**TOP OF BORING** 112.0 Feet / **GROUND WATER** 103.9 Feet
NAME & TITLE OF FIELD INSPECTOR	Laura Roebuck, Geologist	**NAME OF DRILLER**	John Lamar
MANUFACTURER'S DESIGNATION OF DRILL	CME-75	☒ **AUTO HAMMER** ☐ **MANUAL HAMMER**	
DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks
THICKNESS OF OVERBURDEN	N/A	**TOTAL NUMBER CORE BOXES**	0
DEPTH TO TOP OF ROCK	N/A	**TOTAL SAMPLES**	**DISTURBED** 23 / **UNDISTURBED (UD)** 0
TOTAL DEPTH OF BORING	70.4 Feet	**TOTAL RECOVERY FOR BORING**	83 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
112.0	0.0									
			(SM) SAND, silty	87	1		SPT Sampler		5 9 8	17
				100	2		SPT Sampler		3 4 4	8
109.0	3.0									
108.8	3.2		(SP-SC) SAND, poorly-graded with clay		3					
			(SP) SAND, poorly-graded	87	4		SPT Sampler		3 3 3	6
				67	5		SPT Sampler		2 3 3	6
			At El. 106.0 Ft., dry	87	6		SPT Sampler		3 3 4	7
			At El. 104.5 Ft., wet	87	7 8		SPT Sampler		3 1 8	9
103.6	8.4		(GP) GRAVEL, poorly-graded, wet	53	9		SPT Sampler		5 4	

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 2 OF 6 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES
X = 2,117,273 Y = 875,687

ELEVATION TOP OF BORING
112.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
101.5	10.5			53	9		SPT Sampler		2	6
0.8										
10.5			(SP) SAND, poorly-graded		10				2	
0.9				60	11		SPT Sampler		2	4
100.2	11.8								2	
11.8										
100.0	12.0		(CL) CLAY, lean							
12										
99.8	12.2		(ML) SILT, inorganic-L		12				8	
12.2			(CL) CLAY, lean							
1.5				100	13		SPT Sampler		23	49
98.5	13.5								26	
13.5										
97.0	15.0						Advanced Boring w/ hollow stem auger			
15										
			(CL) CLAY, lean						17	
1.5				100	14		SPT Sampler		23	51
									28	
									13	
1.5				100	15		SPT Sampler		20	47
94.0	18.0								27	
18										
							Advanced Boring w/ hollow stem auger			
89.0	23.0									
23										
1.5			(CL) CLAY, lean	100	16		SPT Sampler		17	

DRILLING LOG (Cont. Sheet)

INSTALLATION Mobile District			**SHEET** 3 **OF** 6 **SHEETS**
PROJECT Riverbank Stabilization Project	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 2,117,273 Y = 875,687	**ELEVATION TOP OF BORING** 112.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
1.5				100	16		SPT Sampler		26 26 34	60
							Advanced Boring w/ hollow stem auger			
4.5				96			Pull-1			
2.8				56			Pull-2			
32.5	79.5	32.5					Advanced Boring w/ fishtail bit			

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 4 OF 6 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / NAVD88
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 2,117,273 Y = 875,687	112.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
72.0	40.0						Advanced Boring w/ fishtail bit			
40										
			(CL) CLAY, lean						16	
1.5				100	17		SPT Sampler		24	57
70.5	41.5								33	
41.5										
							Advanced Boring w/ fishtail bit			
67.0	45.0									
45										
			(CL) CLAY, lean						22	
1.5				100	18		SPT Sampler		44	93
65.5	46.5								49	
46.5										
							Advanced Boring w/ fishtail bit			
62.0	50.0									
50										
			(CL) CLAY, lean						28	
1.5				100	19		SPT Sampler		39	

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET 5 OF 6 SHEETS
Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Riverbank Stabilization Project	State Plane - Alabama West - U.S. Survey Ft.	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 2,117,273 Y = 875,687	112.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
1.5 60.5	51.5			100	19		SPT Sampler		39 46	85
51.5							Advanced Boring w/ fishtail bit			
57.0	55.0									
55			(CL) CLAY, lean		20					
0.5 56.5 55.5	55.5			63			SPT Sampler		41	
			(ML) SILT, inorganic-L						50/0.3"	
							Advanced Boring w/ fishtail bit			
52.0	60.0									
60 0				0	n/a		SPT Sampler		50/0.1"	
							Advanced Boring w/ fishtail bit			

DRILLING LOG (Cont. Sheet)	INSTALLATION: Mobile District	SHEET 6 OF 6 SHEETS
PROJECT: Riverbank Stabilization Project	COORDINATE SYSTEM/DATUM: State Plane - Alabama West - U.S. Survey Ft. / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 2,117,273 Y = 875,687	ELEVATION TOP OF BORING: 112.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
47.0	65.0						Advanced Boring w/ fishtail bit			
46.5	65.5		(SP) SAND, poorly-graded	NR	22		SPT Sampler		50	
42.0	70.0						Advanced Boring w/ fishtail bit			
41.6	70.4		(SP) SAND, poorly-graded	100	23		SPT Sampler		50/0.4"	

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.
2. Boring was tremied grouted with 10 bags of Portland Type I/II cement on 3/19/2021
3. RQD does not apply because the core sample is clay, not rock
4. Grouted with 10 bags of Portland type I/II cement

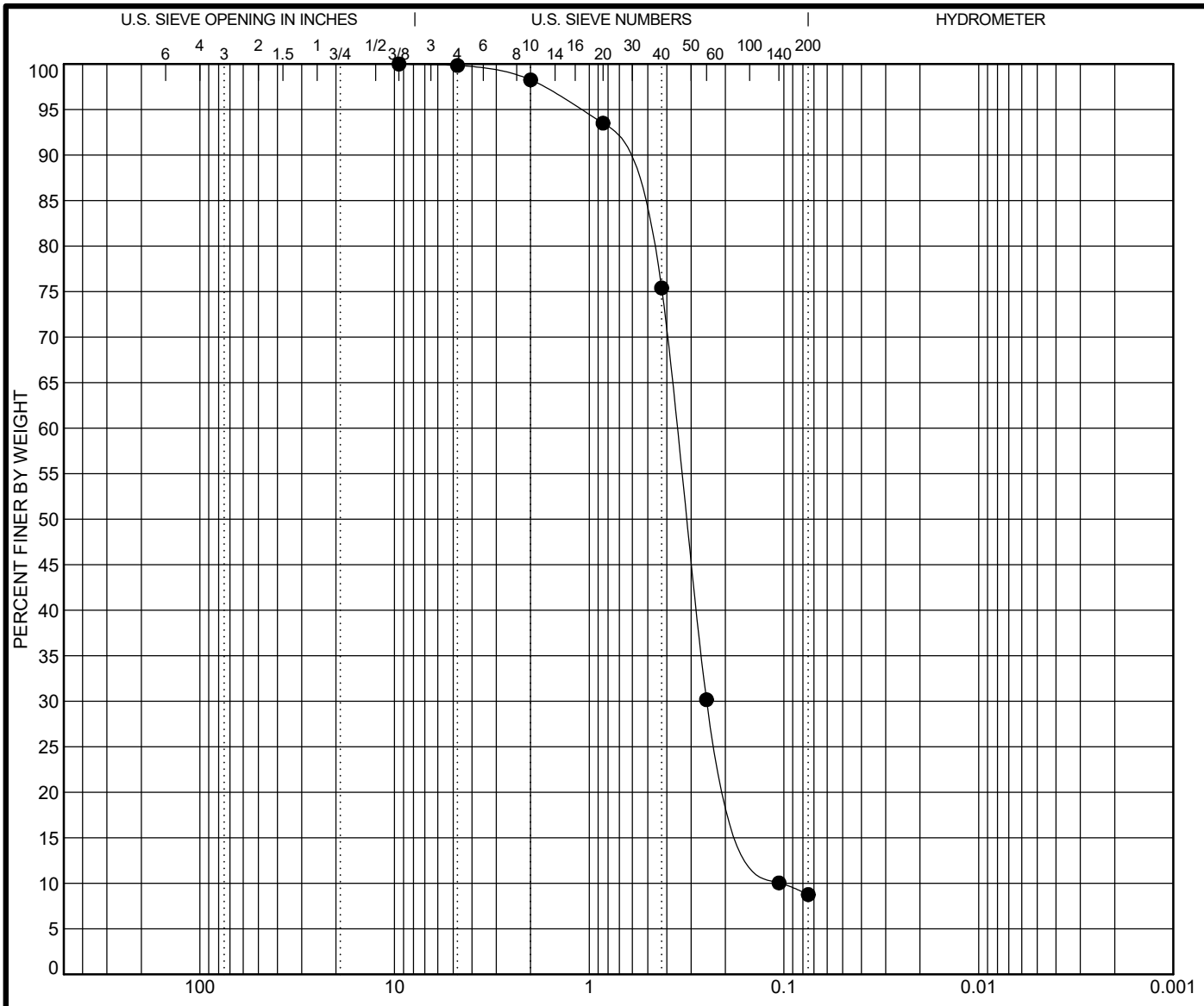
140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Boring Location	Depth (feet)	USCS CLASS	Water Content (%)	-40 Materials		Percent Passing U.S. Standard Sieve							Specific Gravity (SG)	Permeability (cm/sec)	Resitivity (ohms)	Cohesive strength (tsf)	Effective Cohesive strength (tsf)
				LL	PI	#4	#10	#20	#40	#60	#140	#200					
SEL-1-20	9.5	SP-SM	8	NP	NP	99.8	98.3	93.5	75.4	30.2	10.0	8.8	2.6774				
SEL-1-20	15.8	SP	22	NP	NP	95.9	93.6	81.9	40.0	8.6	4.7	4.3	2.7263				
SEL-1-20	20.0	CH	28	74	47		100.0					91.8					
SEL-2-20	2.6	SC	12	35	21	96.6	95.3	94.5	91.8	81.2	54.3	49.0	2.6838				
SEL-2-20	8.0	SM	9	NP	NP	71.3	63.2	59.5	53.0	31.3	15.8	14.2					
SEL-2-20	11.0	SP-SM	13	NP	NP	99.7	98.4					8.5					
SEL-2-20	17.0	SP	17	NP	NP	70.4	57.2	42.5	18.8	7.0	4.0	3.7					
SEL-2-20	26.0	CH	27	80	52		100.0					96.5					
SEL-3-20	5.0	SC	13	28	16		100.0	98.4	96.0	84.7	53.4	46.6					
SEL-3-20	12.5	SM	20	18	2	98.7	97.2	95.0	88.8	69.5	38.0	32.6	2.6739				
SEL-3-20	24.5	MH	26	77	38		100.0					95.8	2.7623				

GEOTECHNICAL ENGINEERING TESTING, INC.

REPORT OF LABORATORY TEST DATA

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-1-20 S-7;9.5 ft.**	**POORLY GRADED SAND with SILT (SP-SM)**	**NP**	**NP**	**NP**	**1.66**	**3.38**

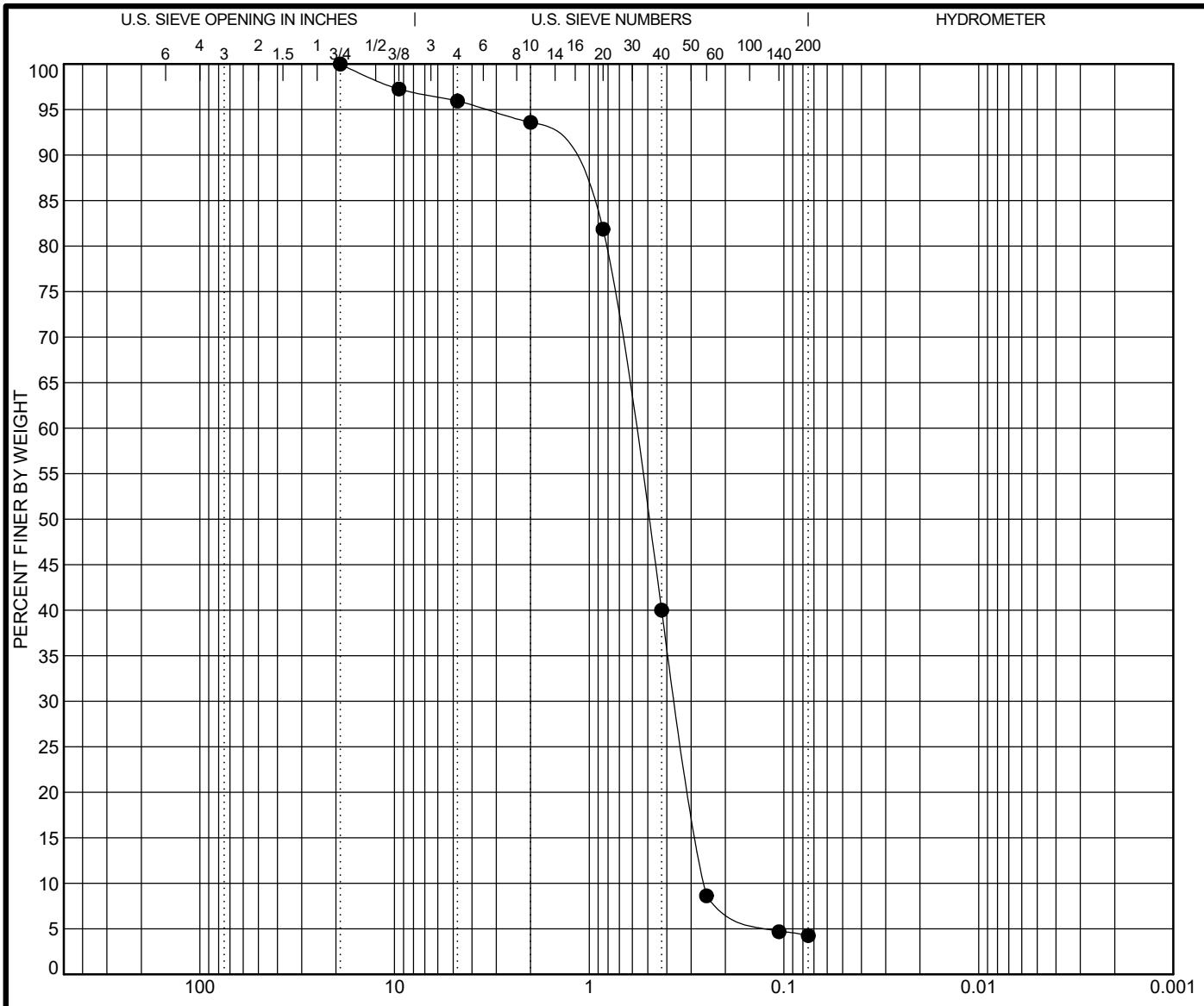
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-01-20 9.5 ft.	**9.5**	**0.355**	**0.248**	**0.105**	**0.2**	**91.1**	**8.8**	

REMARKS: **Specific Gravity of soil solids: 2.68**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**SEL-1-20S-12;15.8 ft.**	**POORLY GRADED SAND (SP)**	**NP**	**NP**	**NP**	**0.85**	**2.31**

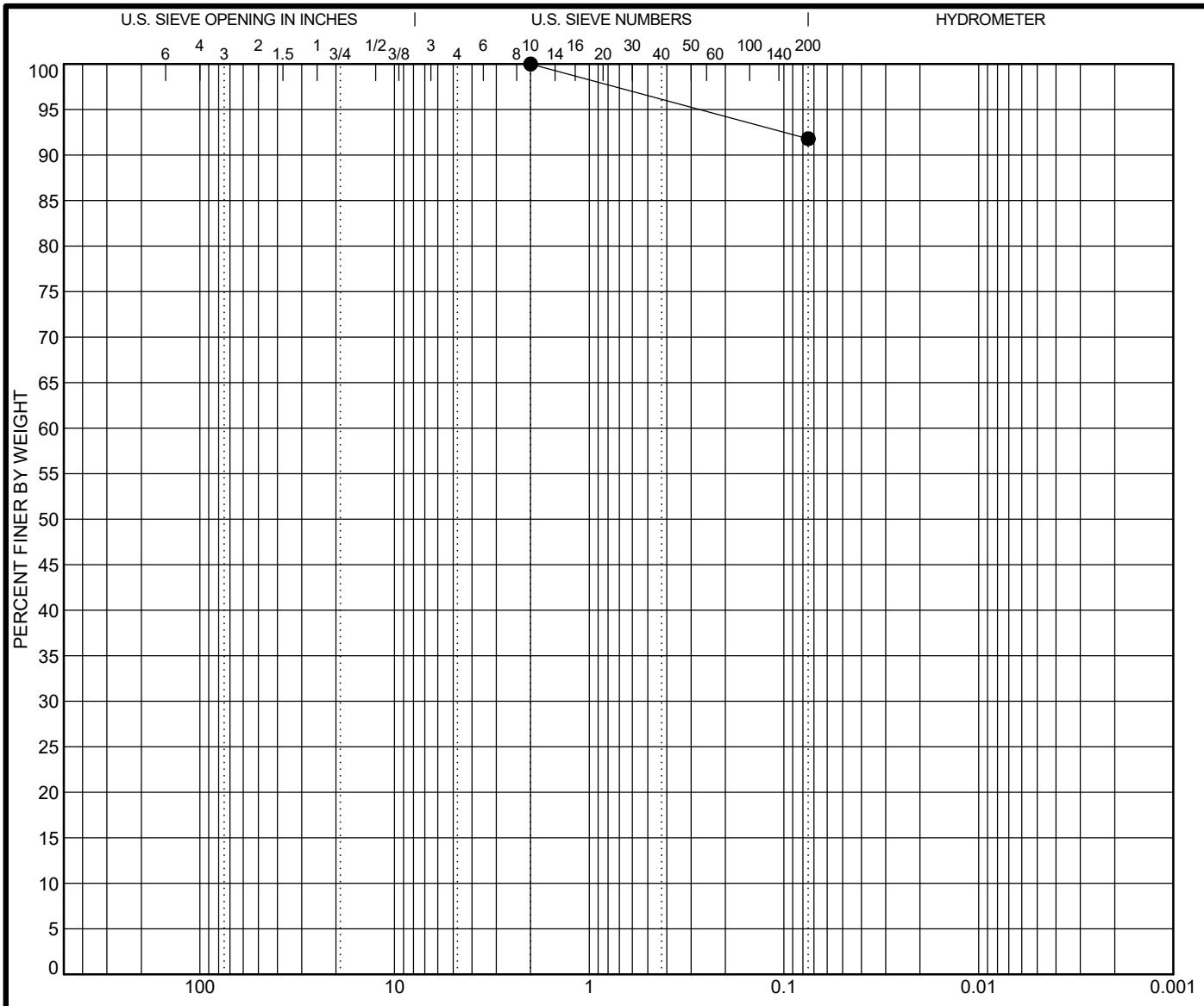
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-01-20 15.8 ft.	**19**	**0.592**	**0.359**	**0.256**	**4.1**	**91.7**	**4.3**	

REMARKS: **Specific Gravity of soil solids: 2.73**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-1-20S-16;20.0 ft.**	**FAT CLAY (CH)**	**74**	**27**	**47**		

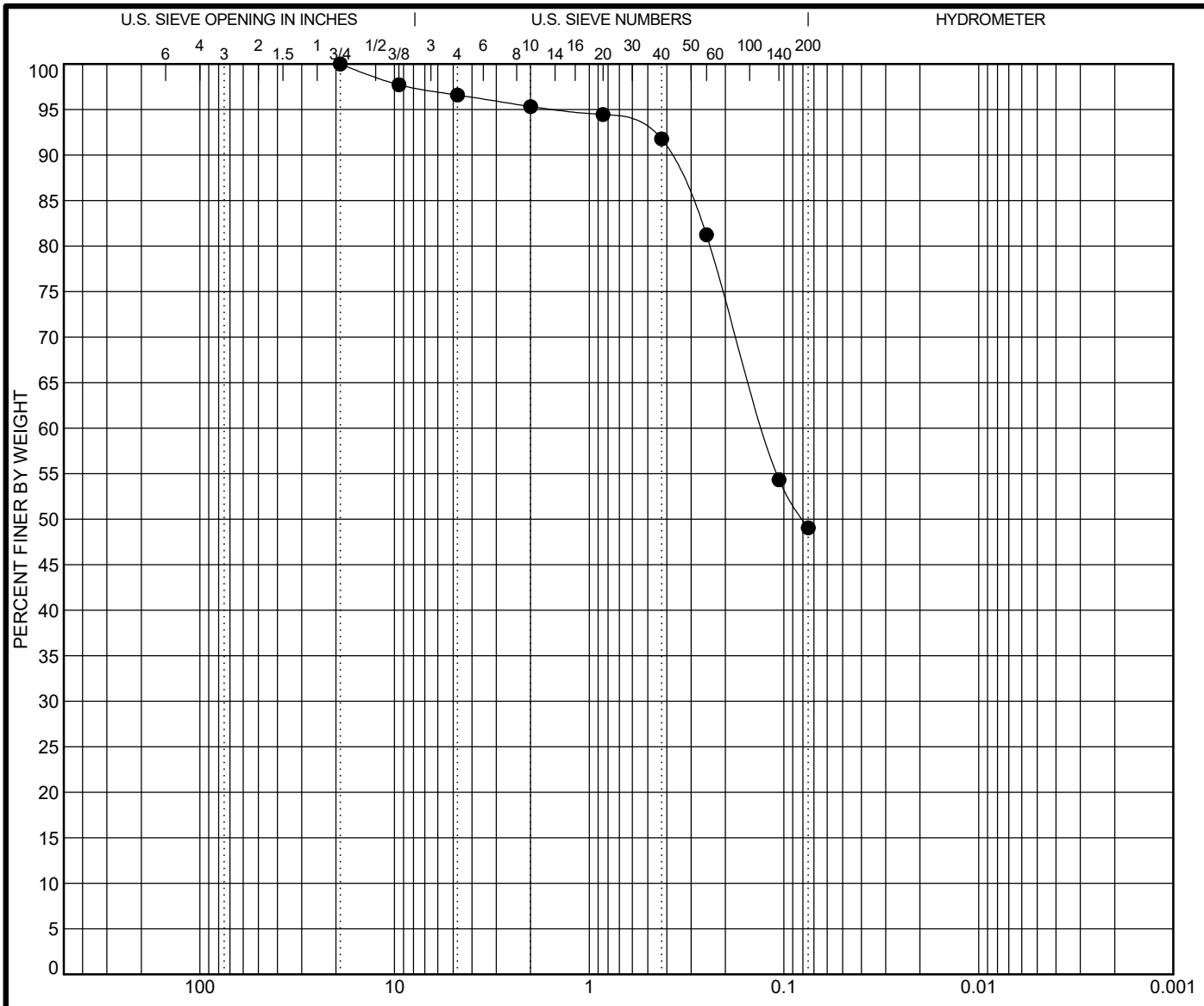
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-01-20 20.0 ft.	**2**				**0.0**	**8.2**	**91.8**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**SEL-2-20 S-3;2.6 ft.**	**CLAYEY SAND (SC)**	**35**	**14**	**21**		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-02-20 2.6 ft.	**19**	**0.127**			**3.4**	**47.5**	**49.0**	

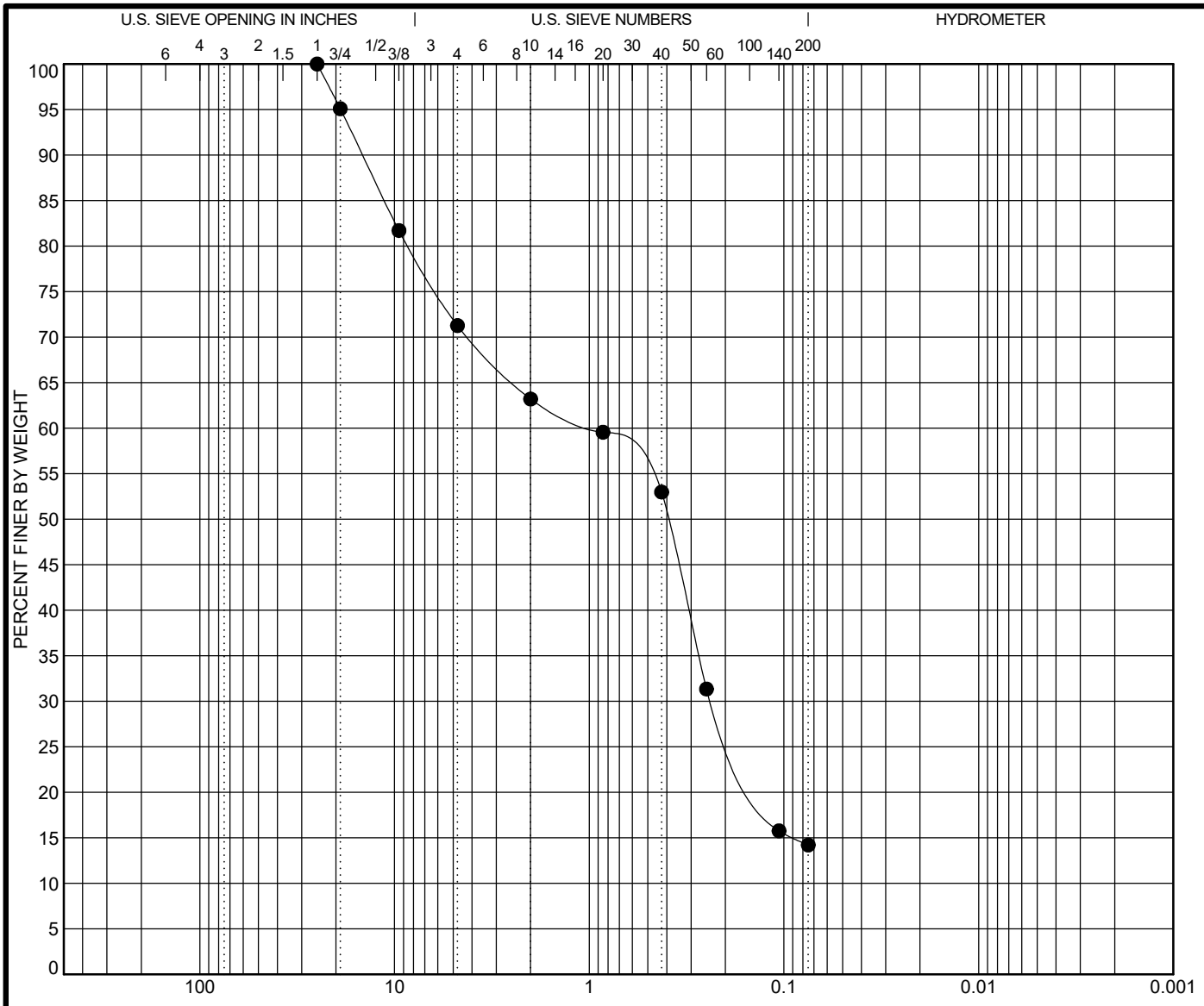
REMARKS: **Specific Gravity of soil solids: 2.68**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET GRAINSIZE 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-2-20 S-7;8.0 ft.**	**SILTY SAND with GRAVEL (SM)**	**NP**	**NP**	**NP**		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-02-20 8.0 ft.	**25**	**0.945**	**0.232**		**28.7**	**57.1**	**14.2**	

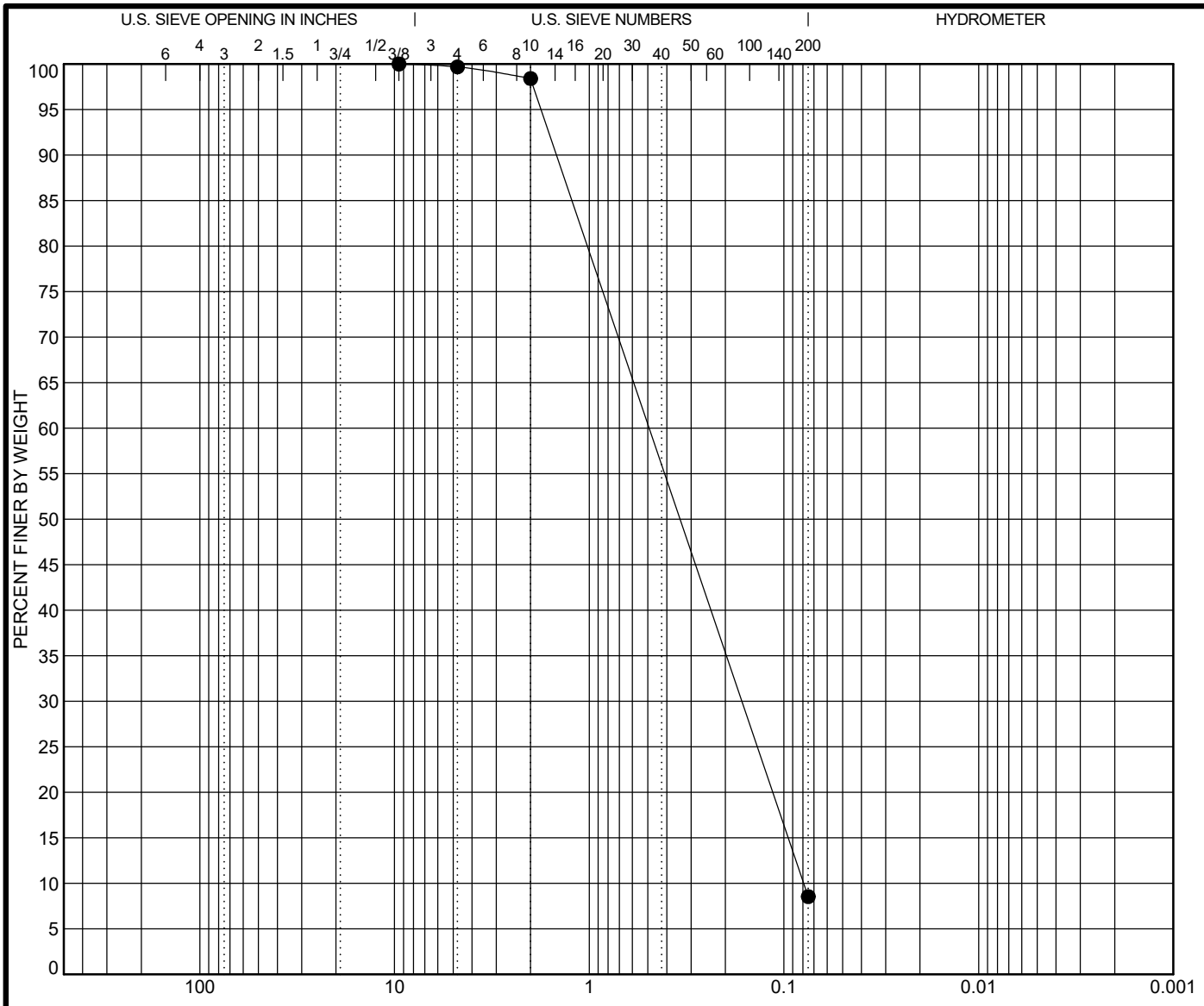
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET GRAINSIZE 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-2-20 S-9;11.0 ft.**	**POORLY GRADED SAND with SILT (SP-SM)**	**NP**	**NP**	**NP**	**0.69**	**6.21**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-02-20 11.0 ft.	**9.5**	**0.492**	**0.164**	**0.079**	**0.3**	**91.1**	**8.5**	

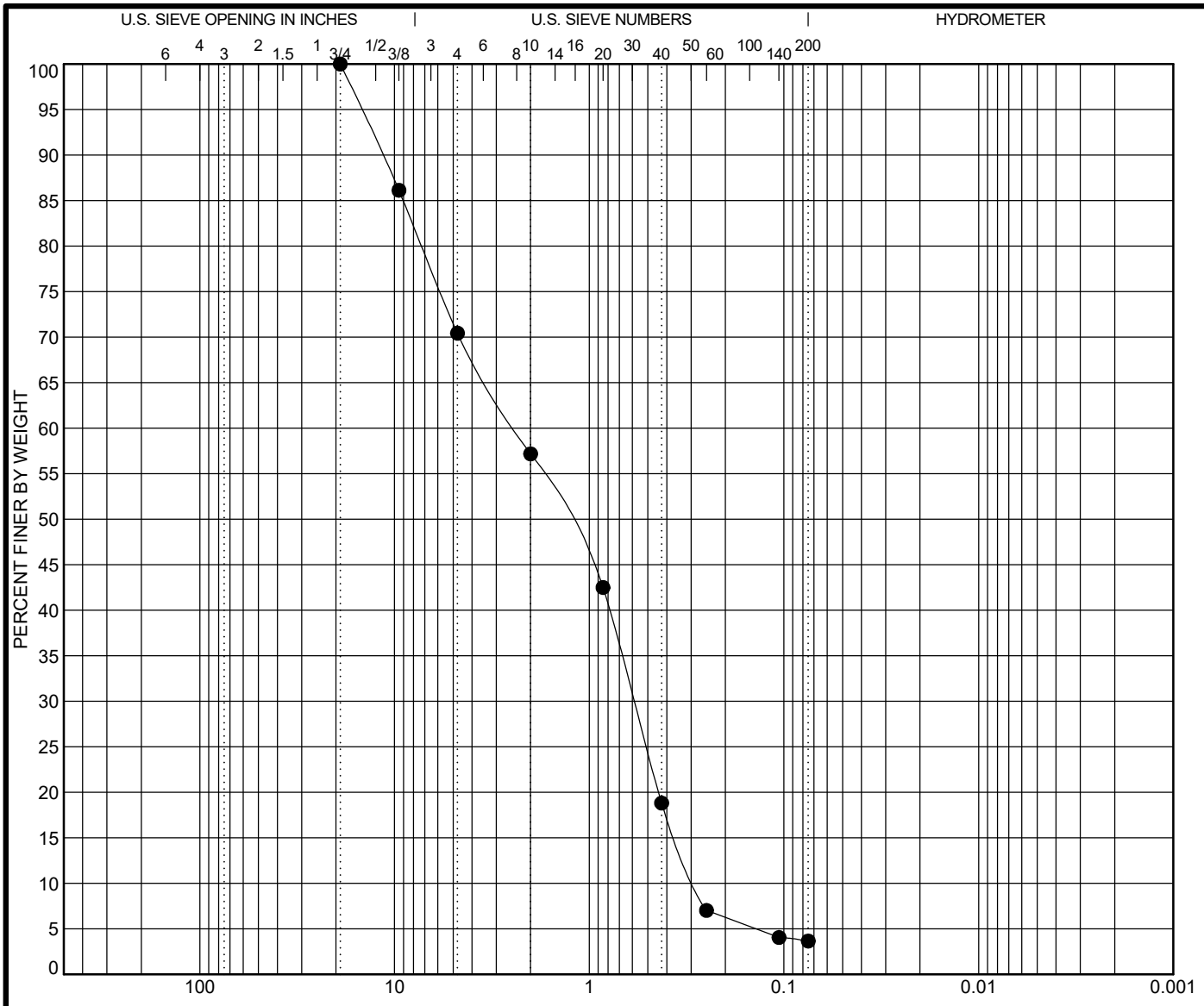
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET GRAINSIZE 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-2-20S-13;17.0 ft.**	**POORLY GRADED SAND with GRAVEL (SP)**	**NP**	**NP**	**NP**	**0.51**	**8.41**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-02-20 17.0 ft.	**19**	**2.405**	**0.59**	**0.286**	**29.6**	**66.8**	**3.7**	

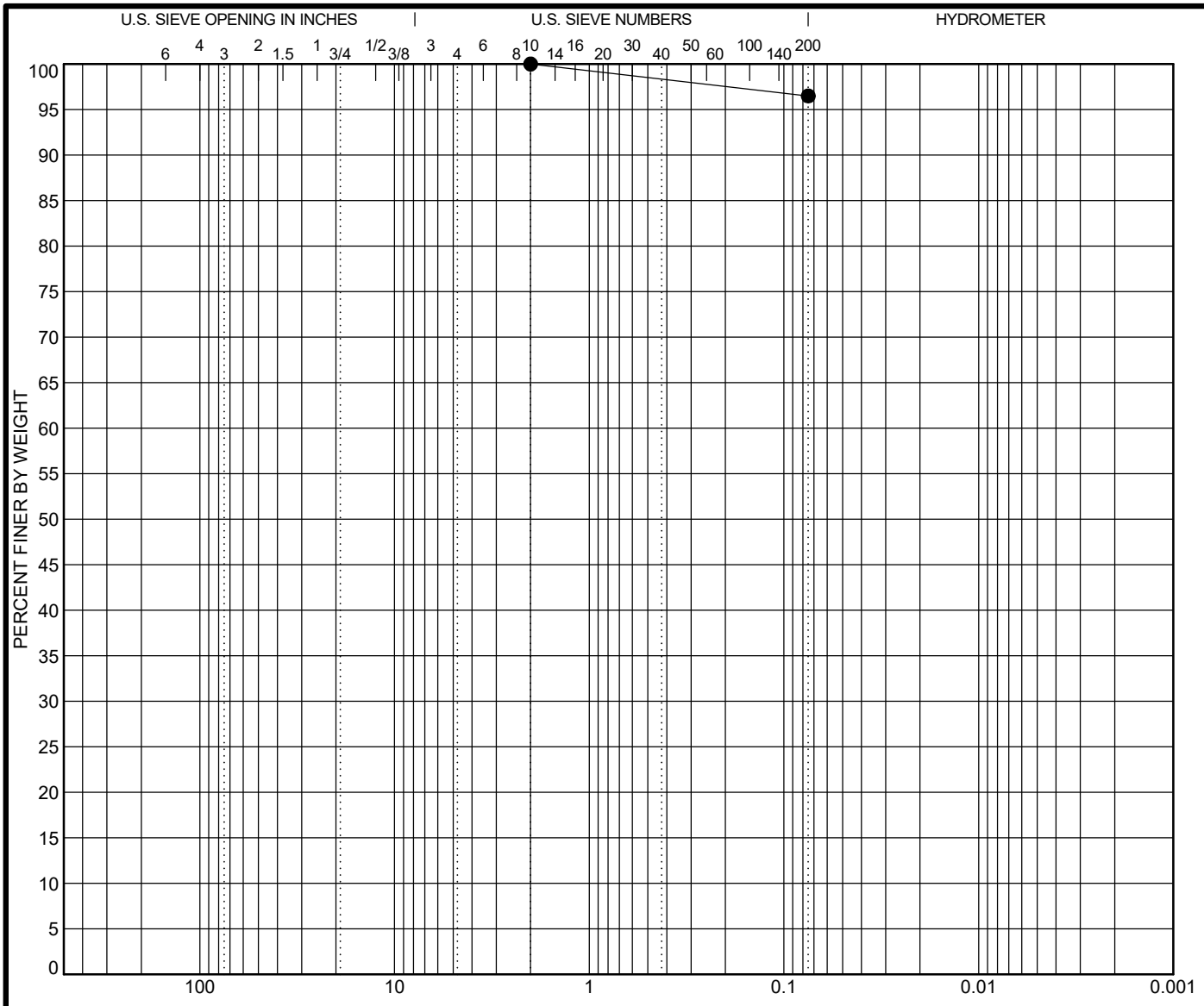
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET GRAINSIZE 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**SEL-2-20S-19;26.0 ft.**	**FAT CLAY (CH)**	**80**	**28**	**52**		

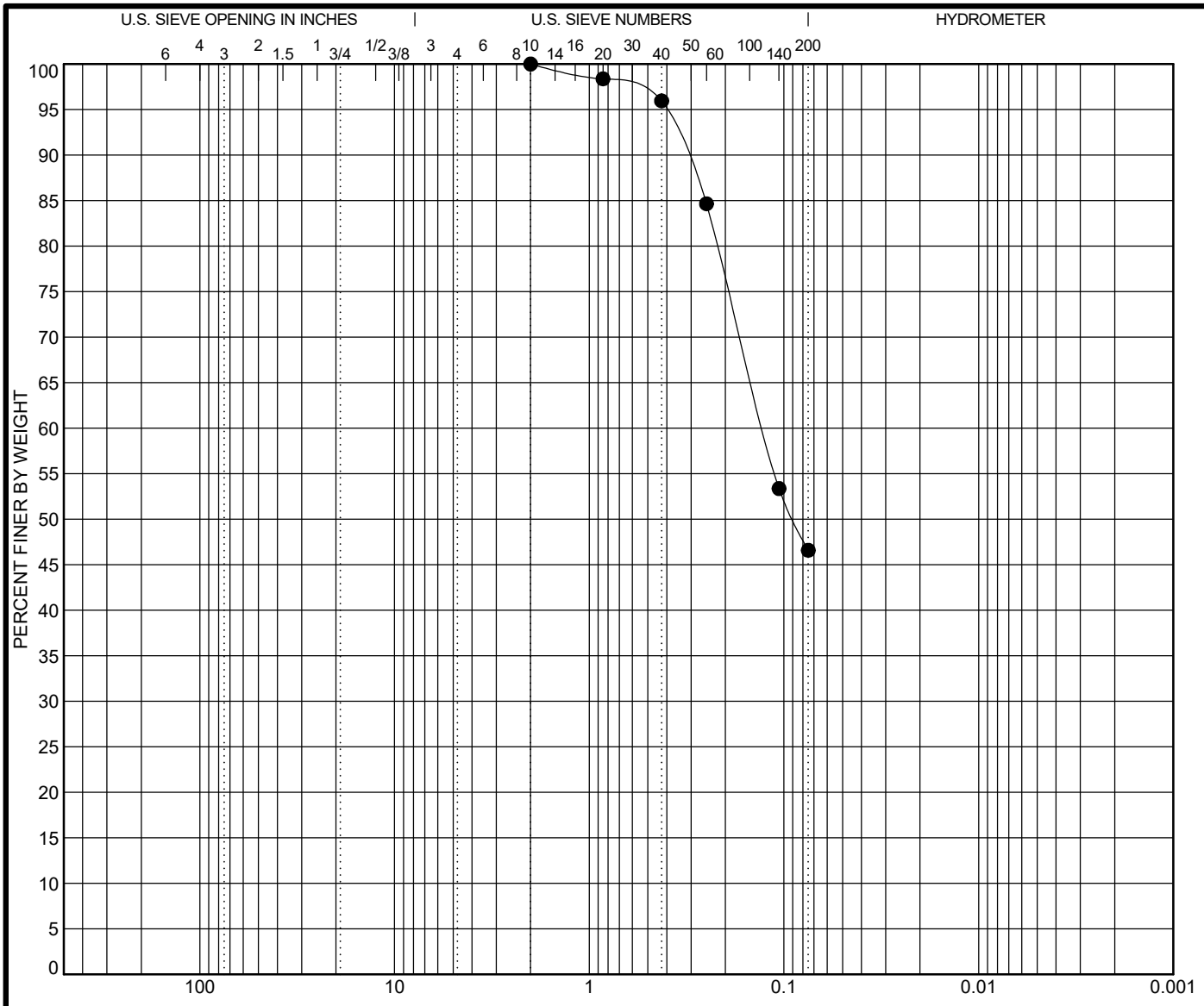
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-02-20 26.0 ft.	**2**				**0.0**	**3.5**	**96.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-3-20 S-4;5.0 ft.**	**CLAYEY SAND (SC)**	**28**	**12**	**16**		

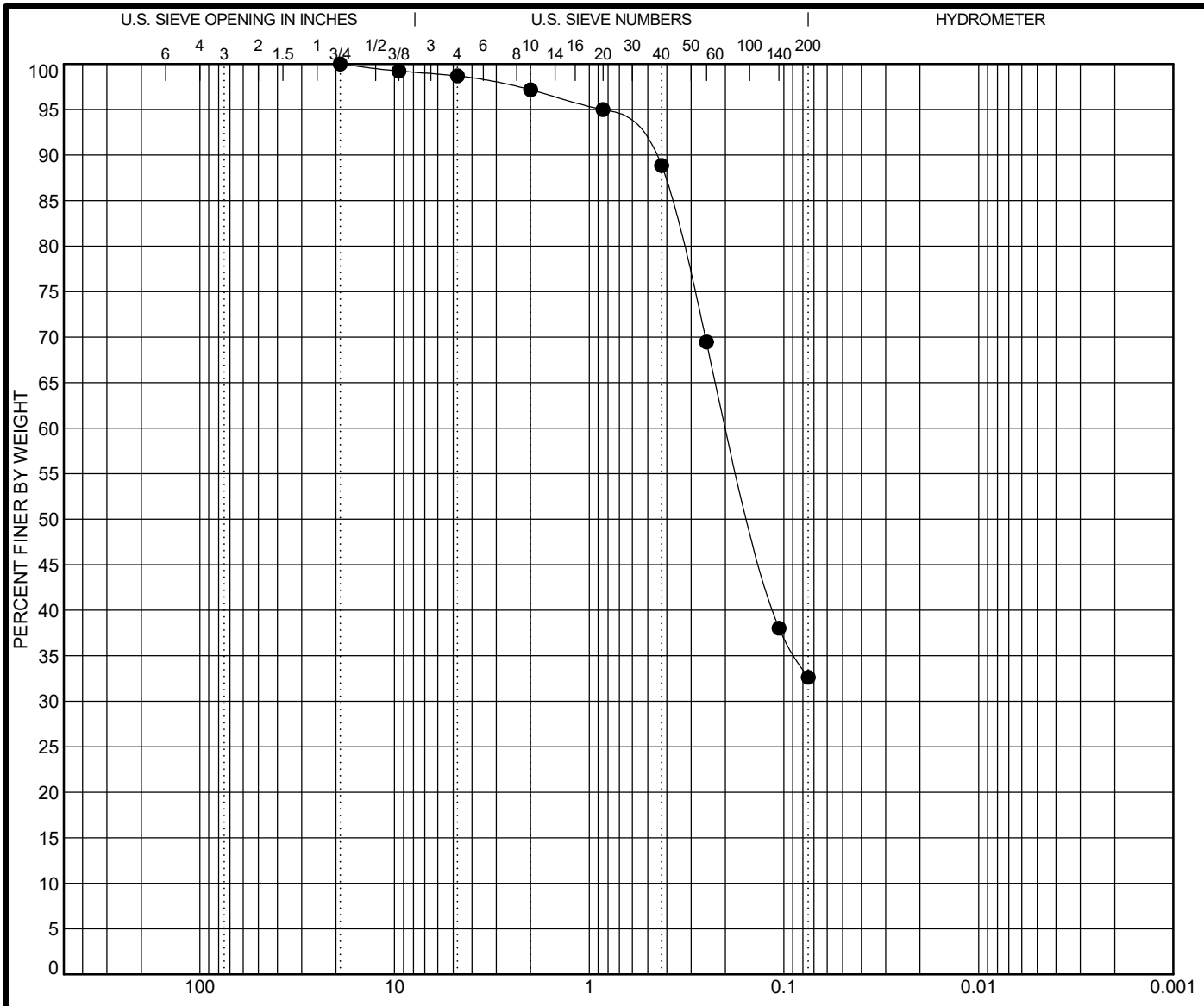
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-03-20 5.0 ft.	**2**	**0.127**			**0.0**	**53.4**	**46.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**SEL-3-20 S-9;12.5 ft.**	**SILTY SAND (SM)**	**18**	**16**	**2**		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-03-20 12.5 ft.	**19**	**0.193**			**1.3**	**66.1**	**32.6**	

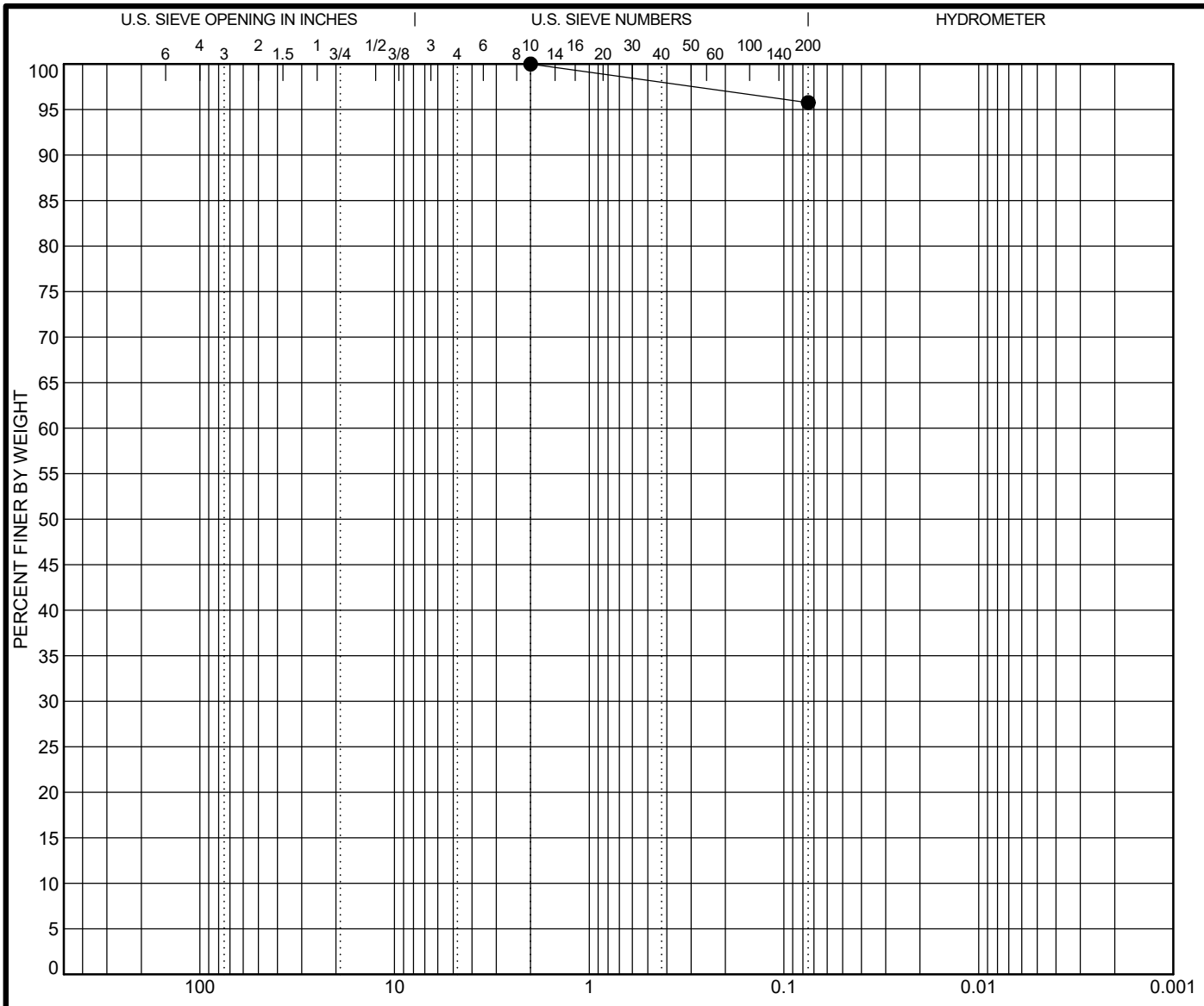
REMARKS: **Specific Gravity of soil solids: 2.67**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET GRAINSIZE 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **SEL-3-20S-17;24.5 ft.**	**ELASTIC SILT (MH)**	**77**	**39**	**38**		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
SEL-03-20 24.5 ft.	**2**				**0.0**	**4.2**	**95.8**	

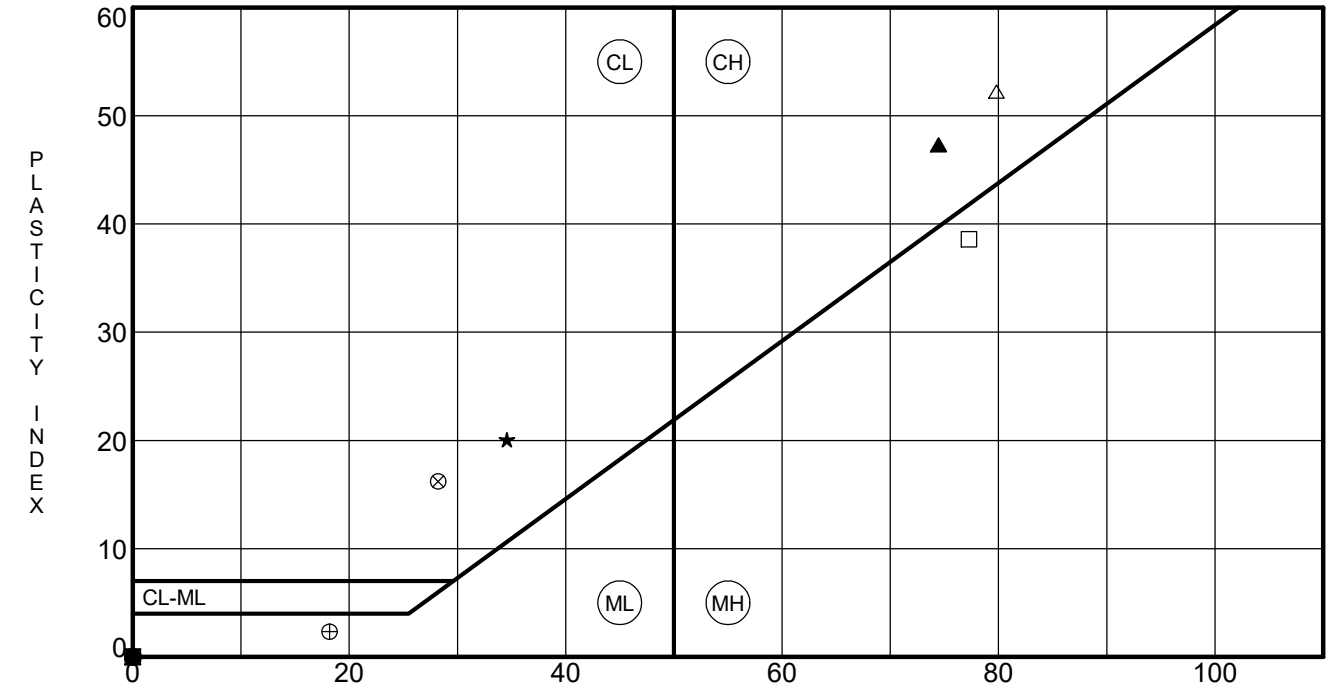
REMARKS: **Specific Gravity of soil solids: 2.76**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

GET_GRAINSIZE_20-188 - USACE SELMA CAP SLOPE.GPJ GETI_AL.GDT 10/20/20



Test Method: _____

Boring ID		Depth (ft.)	LL	PL	PI	Fines	Classification
●	SEL-1-20	9.5	NP	NP	NP	8.8	POORLY GRADED SAND with SILT (SP-SM)
⊠	SEL-1-20	15.8	NP	NP	NP	4.3	POORLY GRADED SAND (SP)
▲	SEL-1-20	20.0	74	27	47	91.8	FAT CLAY (CH)
★	SEL-2-20	2.6	35	14	21	49.0	CLAYEY SAND (SC)
⊙	SEL-2-20	8.0	NP	NP	NP	14.2	SILTY SAND with GRAVEL (SM)
✿	SEL-2-20	11.0	NP	NP	NP	8.5	POORLY GRADED SAND with SILT (SP-SM)
○	SEL-2-20	17.0	NP	NP	NP	3.7	POORLY GRADED SAND with GRAVEL (SP)
△	SEL-2-20	26.0	80	28	52	96.5	FAT CLAY (CH)
⊗	SEL-3-20	5.0	28	12	16	46.6	CLAYEY SAND (SC)
⊕	SEL-3-20	12.5	18	16	2	32.6	SILTY SAND (SM)
□	SEL-3-20	24.5	77	39	38	95.8	ELASTIC SILT (MH)

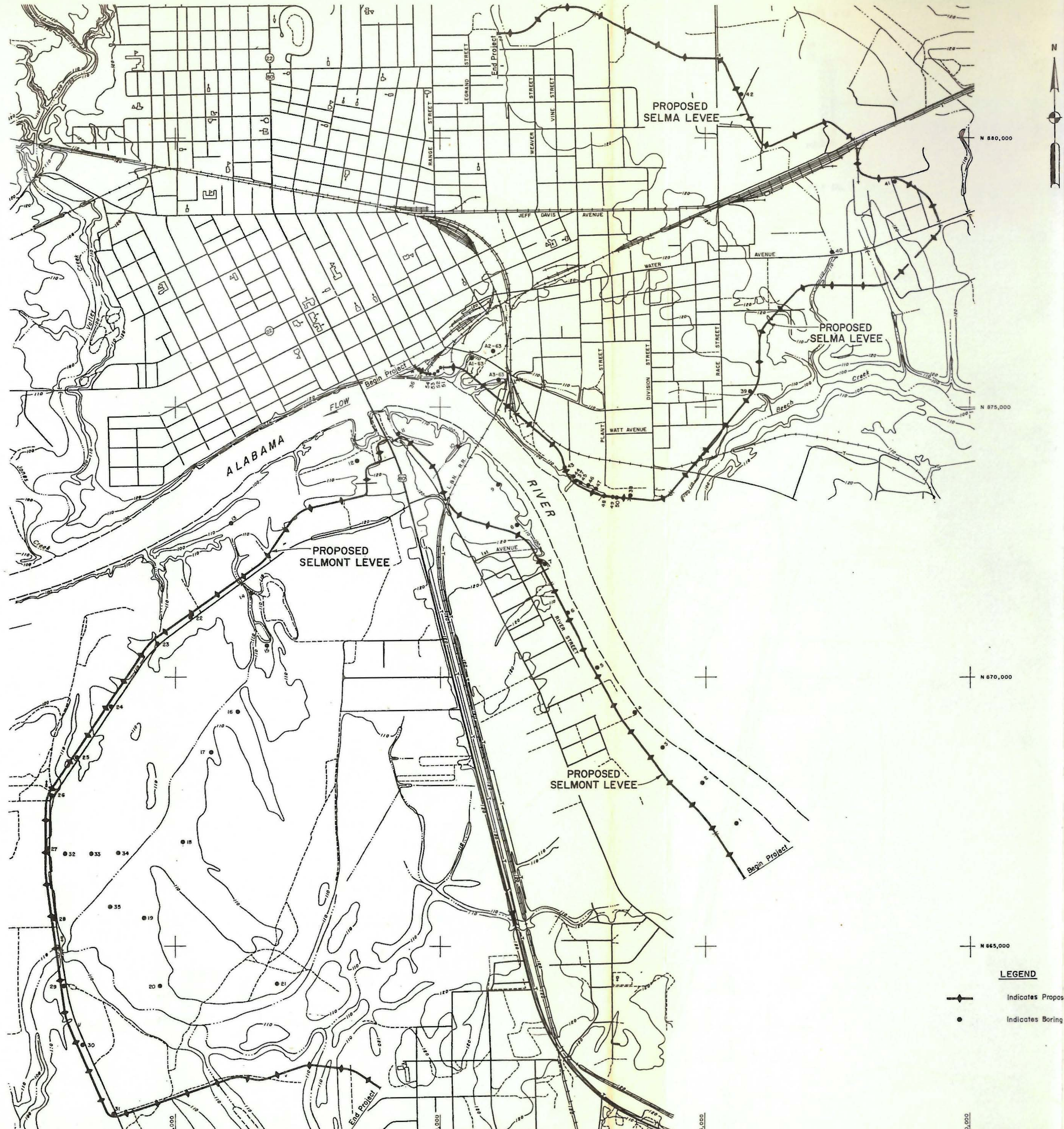
GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: USACE SELMA CAP SECTION 14 SLOPE
G.E.T. PROJ. NUMBER: 20-188
PROJECT LOCATION: SELMA, AL

US ATTERBERG LIMITS 20-188 - USACE SELMA CAP SLOPE.GPJ GETI AL.GDT 10/20/20

1960s USACE Geotechnical Boring Logs



LEGEND

Indicates Proposed Levee

Indicates Boring Locations

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APPROVED

NOTES:

Coordinates are Plane Coordinates, Transverse Mercator Projection for the State of Alabama, West Zone.

Elevations are in feet and refer to Mean Sea Level.

SCALE: 1" = 800'

800 0 800 1600 2400 FT

INTERIM REPORT
ON
ALABAMA – COOSA RIVER SYSTEM
GEORGIA AND ALABAMA

FLOOD PROTECTION SELMA, ALABAMA AND VICINITY

LAYOUT OF BORINGS

IN 3 SHEETS SHEET NO. 1

U.S. ARMY ENGINEER DISTRICT, MOBILE, CORPS OF ENGINEERS
MOBILE, ALA.

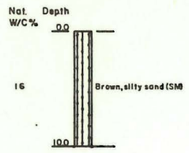
DRAWN BY: M.J.A.
TRACED BY:
CHECKED BY: M.J.A.

FILE NO. A-8-1-184

To accompany Report Dated

SELMONT LEVEE
(HOLE NOS. 1 THRU 31)

HOLE NO. 1



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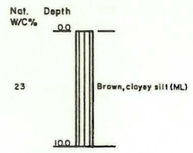

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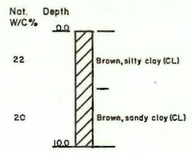

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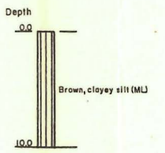
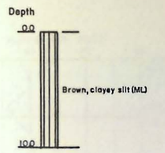


HOLE NO. 5



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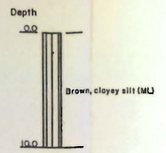

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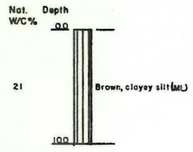

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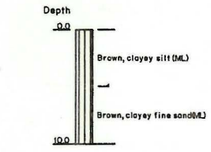

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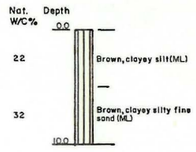

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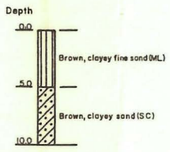

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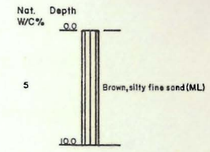

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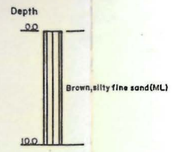

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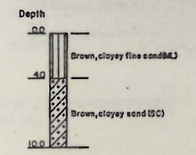

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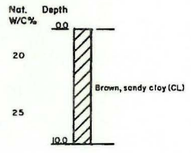

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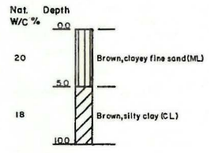

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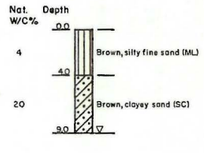

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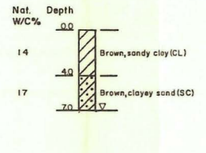

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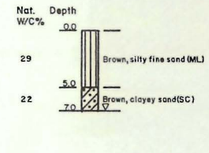

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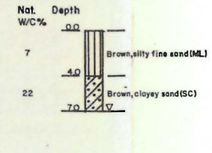

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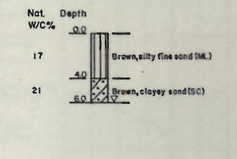

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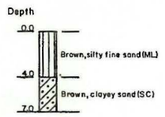

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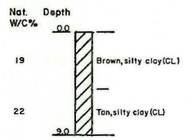

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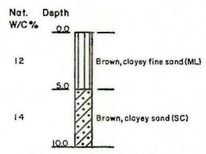

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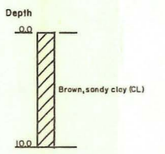

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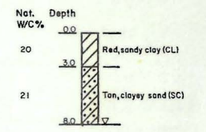

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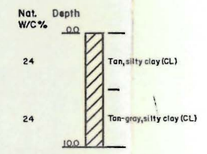

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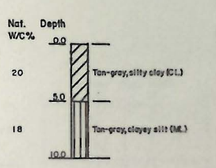

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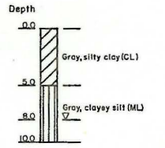

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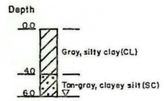

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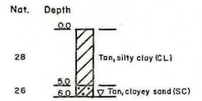

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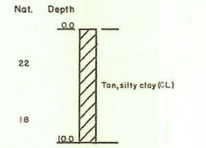


LEGEND

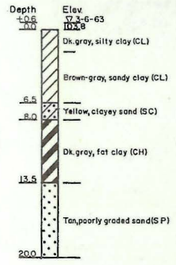
GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
GC	Clayey gravels, gravel-sand-clay mixtures.	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
SP	Poorly graded sands or gravelly sands, little or no fines.	CH	Inorganic clays of high plasticity, fat clays.
SM	Silty sands, sand-silt mixtures.		Conglomerate-cinder fill
SC	Clayey sands, sand-clay mixtures.	Pt	Peat and other highly organic soils.
		▽	Ground-water depths and dates observed.

VERTICAL SCALE: 1"=5'

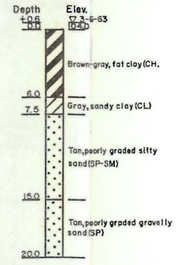
5' 0 5 10 FT.

IMPOUNDMENT AREA
(HOLE NOS. 32 THRU 35)

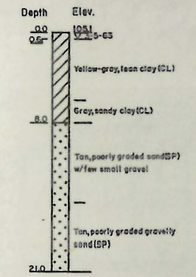
HOLE NO. 32



HOLE NO. 33



HOLE NO. 34



NOTES:

1. Ground-water depths shown on the boring logs represent ground-water surfaces encountered on the dates shown. Absence of water surface data on certain borings implies that no ground-water data is available, but does not necessarily mean that ground-water will not be encountered at the locations or within the vertical reaches of these borings.

2. While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local minor variations in characteristics of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially from the description shown with the logs.

3. Soils are classified in accordance with the Unified Soil Classification System, Military Standard 619 (CE), dated 30 June 1960.

4. Driving resistances on split spoon holes are shown graphically. Blows per foot are determined with a standard split spoon sampler ($1\frac{3}{8}$" I.D., 2" O.D.) and a 140-lb. driving hammer with a 30" drop.

5. For Location of Borings see Chart No. 1.

REVISIONS

SYM.	ZONE	DESCRIPTION	DATE	APPROVED	

INTERIM REPORT
ON
ALABAMA-COOSA RIVER SYSTEM
GEORGIA AND ALABAMA
FLOOD PROTECTION SELMA, ALABAMA AND VICINITY

LOGS OF BORINGS

IN 3 SHEETS SHEET NO. 2

U.S. ARMY ENGINEER DISTRICT, MOBILE, CORPS OF ENGINEERS
MOBILE, ALA.

DRAWN BY: R.L.E.
TRACED BY: R.L.E.
CHECKED BY: M.J.A.

FILE NO. A-8-1-185

To accompany Report Dated

APPENDIX IV - CHART NO. 2

5 4 3 2

E D C B A

IMPOUNDMENT AREA

HOLE NO. 35

A1-63

Depth	
0.0	106.8
1.0	12.3-1-63 Yellow, clayey sand (SC)
	Yellow-red-gray, sandy clay (CL)
4.0	
	Tan, poorly graded silty sand (SP-SM)
16.0	
	Yellow, poorly graded silty sand (SP-SM) w/trace of clay
	Yellow, poorly graded gravelly sand (SP)
22.0	

Depth	Elev.	
0.0	98.0	Dark brown, clayey silt (ML)
0.5		
		Brown, clayey sand (SC)
5.0	93.0	
5.5		Gray, soft weathered Selma Chalk
	92.5	Top firm Selma Chalk

A2-63

Depth	Elev.	
0.0	114.0	
0.5		Dark brown, clayey silt (ML)
		Brown, silty clay (CL)
4.0		
		Yellow, clayey sand (SC)
7.0		
		Yellow, poorly graded sand (SP)
		▽ 10/25/63
12.0		Tan, poorly graded sand (SP) with pea gravel
		Yellow, poorly
21.5		Yellow, poorly graded sand (SP), coarse to fine with pea gravel
	92.5	
		Gray, soft fat clay (CH) weathered Selma Chalk
25.0	89.0	Gray, firm Selma Chalk

A3-63

Depth	Elev.	
0.0	111.0	
2.0		Dark brown, clayey silt (ML)
		Yellow-red, silty clay (CL)
		Yellow, silty clay (CL)
12.0		Yellow, sandy clay (CL)
15.0		Light yellow, sandy clay (SC)
		Yellow, clay gravel (GC)
18.5	92.5	
		Gray, fat clay (CH) soft weathered Selma Chalk
21.0		Firm Selma Chalk

SELMA LEVEE
(HOLE NOS. 36 THRU 42)

HOLE NO. 36

Nat. W/C %	Depth	
	0.0	
13	1.5	Poorly graded sand (SP) w/ organic traces
13	3.0	Lean clay (CL)
27		
24	6.0	Fat clay (CH)
11	7.5	Lean clay (CL)
17	9.0	Clayey sand (SC)
13	10.0	▽ 12-8-59 Poorly graded sand (SP) w/ gravel

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 37

Nat. W/C %	Depth	
4	0.0	
3		
13		
4		
6		Poorly graded gravel (GP)
4		
6	10.0	▽ 12-7-59
13		
14	13.5	Poorly graded sand (SP) w/ gravel
12	15.0	
29	16.5	Clay (CL)

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 38

Nat. W/C %	Depth	
17	0.0	
14		Silty clay (CL) w/organic traces
14	7.5	
18		Clayey sand (SC)
13	10.5	
18		Silty clayey sand (SM-SC)
15	12.0	
3		Poorly graded gravel (GP)
4	15.0	

BLOWS PER FOOT: 0 20 40 60 — 77 80

VICINITY OF ZEIGLER'S PACKING PLANT
(HOLE NOS. 43 THRU 50)

HOLE NO. 39

Nat. W/C %	Depth	
15	0.0	
16		
14		Lean clay (CL)
	4.5	
4		
4		Poorly graded gravel (GP)
3		
6	10.5	Poorly graded gravel (GP) w/clay traces
3	12.0	Poorly graded silty sand SP-SM) w/gravel
4	13.5	Poorly graded gravel (GP)
3	15.0	Poorly graded silty sand SP-SM) w/ gravel

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 40

Nat. W/C %	Depth	
18	0.0	
15		Lean clay (CL)
13		Sandy clay (CL)
14	6.0	
20	7.0	▽ 12-8-59 Poorly graded silty sand (SP-SM)
16	7.5	Silty sand (SM) w/ pea gravel
11	10.5	
12		Poorly graded silty sand (SP-SM) w/ gravel
15	13.5	
5	15.0	Poorly graded gravel (GP)

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 41

Nat. W/C %	Depth	
12	0.0	
20	1.5	Clayey sand (SC)
19		Sandy clay (CL)
		Sandy clay (CL) w/ pea gravel
17	6.0	Sandy clay (CL)
21	7.0	▽ 12-8-59 Clayey sand (SC)
12	7.5	
16		Poorly graded sand (SP) w/ gravel
13	13.5	
17		Poorly graded gravel (GP)
8	15.0	

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 42

Nat. W/C %	Depth	
12	0.0	
26		Tan, lean clay (CL)
32		Lean clay (CL)
26	6.5	
24	7.5	Clay (CL) ▽ 12-8-59 Sandy clay (CL)
23		
22		Clayey sand (SC)
25	12.0	
	13.5	No recovery

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 43

Nat. W/C %	Depth	Elev.	
18	0.0	114.0	
19	1.5		Tan, gravelly sand (SP) w/ soft sandy clay layer
19			Brown, sandy clay (CL) soft
19	6.0		
20			Gray, silty clay (CL) w/ small layers of sand
16			Brown-gray, clayey silt (ML)
19	10.5		
2			Brown-gray, clayey silt (ML) w/ gravelly sand layer
2			
3			Tan, poorly graded gravelly sand (GP)
5	16.5		

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 44

Nat. W/C %	Depth	Elev.	
5	0.0	115.0	
31	1.5		Red, clayey gravel (GC) (road surface)
22			
25			Brown, silty clay (CL) (possible fill material)
31			
28			
26	10.5		
30			Brown-gray, clayey silt (ML)
20			Gray, clayey silt (ML)
17			Gray, clayey silt (ML) w/layer of sandy clay w/small gravel
13	16.5		Gray, clayey silt (ML) w/ few gravel

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 45

Nat. W/C %	Depth	Elev.	
8	0.0	115.0	
17	1.5		Red, clayey gravel (GC) (road surface)
18			Brown, silty clay (CL) (probable fill)
12	6.0		Brown, sandy clay (CL)
10			Brown-red, clayey sand (SC)
13	9.0		Brown, clayey sand (SC)
3			Tan, poorly graded gravel-sand mixture (GP)
10			
6	13.5		

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 46

Nat. W/C %	Depth	Elev.	
19	0.0	115.0	
23			Brown, silty clay (CL)
19			Brown, sandy clay (CL)
17	6.0		
11	7.5		Brown, clayey sand (SC)
10	9.0		Brown, poorly graded sand (SP) w/slight clay content
11			
4			Tan, poorly graded gravel-sand mixture (GP)
7			
2	15.0		

BLOWS PER FOOT: 0 20 40 60 — 100+

HOLE NO. 47

Nat. W/C %	Depth	Elev.	
12	0.0	115.0	
13	1.5		Red, clayey sand (SC) (working lot topping)
15			Red, sandy clay (CL) (fill material)
27	6.0		Gray, silty clay (CL) soft
24			
23			Yellow-gray, fat clay (CH)
24			
20	12.0		
5			Gray, poorly graded gravel-sand mixture (SP)
4	15.0		Tan, poorly graded gravel-sand mixture (GP)

BLOWS PER FOOT: 0 20 40 60 — 100+ 100+

HOLE NO. 48

Nat. W/C %	Depth	Elev.	
24	0.0	115.0	
24			Lt. red, lean clay (CL)
22			
18	6.0		Lt. red, sandy clay (CL)
17	7.5		Tan, clayey sand (SC)
12			Tan, poorly graded sand (SP)
6			Tan, poorly graded sand (SP) w/ few pea gravel
6	12.0		Tan, poorly graded sand (SP)
3			Tan, poorly graded gravel-sand mixture (GP)
5	15.0		

BLOWS PER FOOT: 0 20 40 60 — 100+ 75

HOLE NO. 49

Nat. W/C %	Depth	Elev.	
20	0.0	114.0	
26			Red, lean clay (CL)
22			
21			Red, sandy clay (CL)
17	7.5		
15			Red, clayey sand (SC)
14			
19			Brown, clayey sand (SC) w/ trace of gravel.
18	13.5		
5			Poorly graded gravel-sand mixture (GP)
3	16.5		

BLOWS PER FOOT: 0 20 40 60 — 100+

HOLE NO. 50

Nat. W/C %	Depth	Elev.	
16	0.0	114.0	
23	1.5		Yellow, clayey silt (ML)
21			Yellow, lean clay (CL)
21			Yellow-red, lean clay (CL)
21			
20	9.0		Yellow-gray, sandy clay (CL)
13			Lt. brown, sandy clay (CL)
16	12.0		Lt. brown, clayey sand (SC)
13	13.5		Tan, poorly graded sand (SP) w/ gravel
3			Tan, poorly graded gravel-sand mixture (GP)
3	16.5		

BLOWS PER FOOT: 0 20 40 60

FLOOD WALL FOR ALABAMA DISTRIBUTING CO.
(HOLE NOS. 51 THRU 54)

HOLE NO. 51

Nat. W/C %	Depth	Elev.	
9	0.0	118.0	
22	1.5		Dk. brown, conglomerate cinder fill
20			Gray-brown, fat clay (CH)
14	4.5		
12	6.0		Gray-brown, sandy clay (CL)
10			Gray-tan, clayey sand (SC)
15			Gray-tan, clayey sand (SC) w/layer of pea gravel
	10.5		Tan, clayey sand (SC) w/pea gravel & trace of clay

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 52

Nat. W/C %	Depth	Elev.	
13	0.0	118.0	
19	1.5		Black, clayey sand (SC) w/ pea gravel and cinders
21			Tan, sandy clay (CL)
20			
16	7.5		Gray, sandy clay (CL)
11	9.0		Tan-gray, silty clayey sand (SM-SC)
11	10.5		Tan, silty sand (SM)

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 53

Nat. W/C %	Depth	Elev.	
10	0.0	118.0	
12	1.5		Black, silty sand (SM) w/ pea gravel
8	3.0		Black, silty clayey sand (SM-SC) w/ cinder particles
15			
14			Tan, clayey sand (SC)
10			
8	10.5		

BLOWS PER FOOT: 0 20 40 60

HOLE NO. 54

Nat. W/C %	Depth	Elev.	
13	0.0	118.0	
19	3.0		Black, conglomerate cinder fill
19			Black, conglomerate cinder & clay fill
16			Brown, silty clay (CL) soft
22			
15	9.0		Brown-red, silty clay (CL) soft
11	10.5		Poorly graded sand (SP)

BLOWS PER FOOT: 0 20 40 60

NOTES:
For Legend and Notes see Chart No. 1.
For Location of Borings see Chart No. 1.

VERTICAL SCALE: 1" = 5'
5' 0 5 10FT.

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APPROVED

INTERIM REPORT
ON
ALABAMA - COOSA RIVER SYSTEM
GEORGIA AND ALABAMA
FLOOD PROTECTION SELMA, ALABAMA AND VICINITY

LOGS OF BORINGS

IN 3 SHEETS — SHEET NO 3
U.S. ARMY ENGINEER DISTRICT, MOBILE, CORPS OF ENGINEERS
MOBILE, ALA.

DRAWN BY: R.L.E.
TRACED BY: R.L.E.
CHECKED BY: M.J.A.

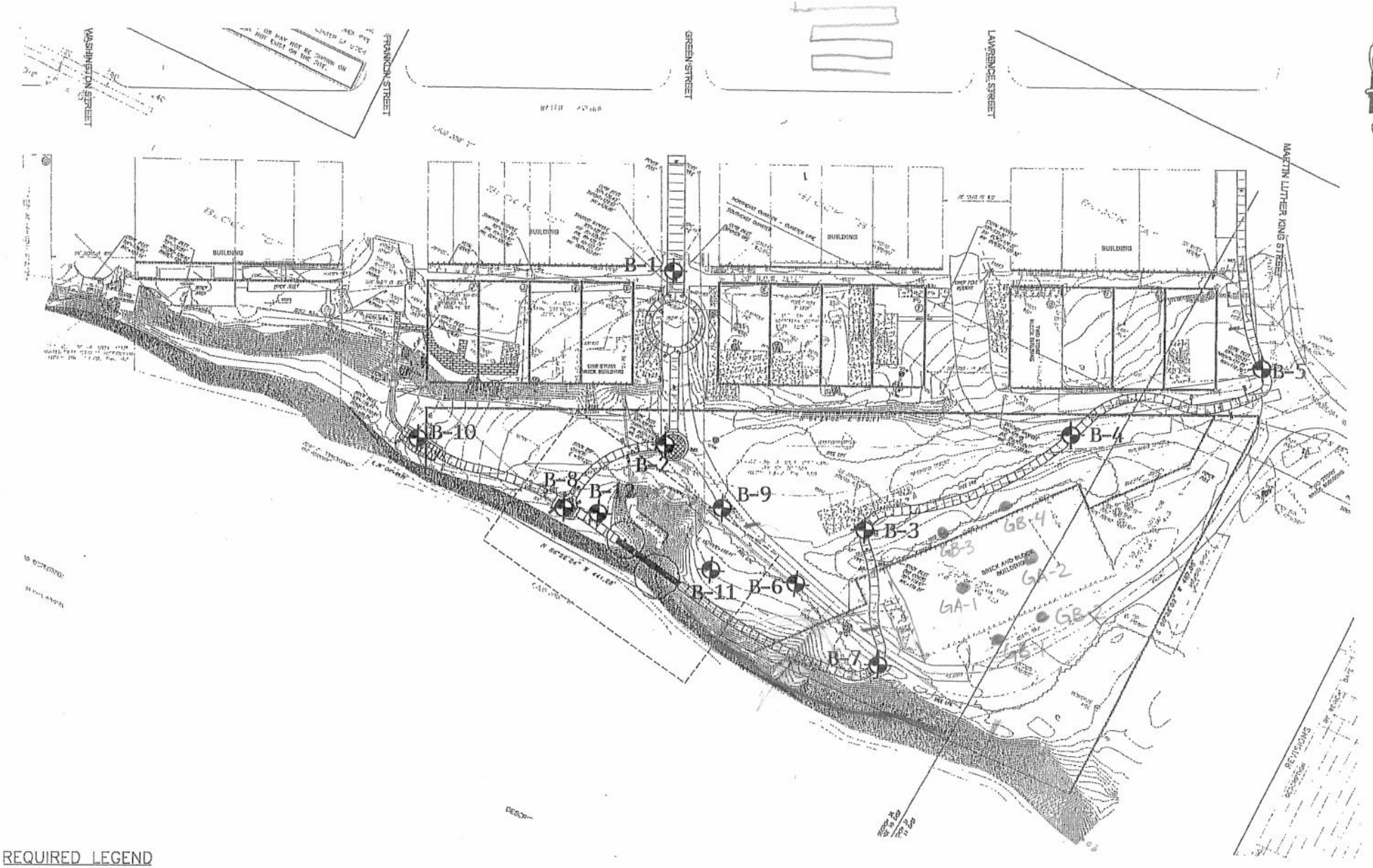
FILE NO. A-8-1-186

To accompany Report Dated

APPENDIX IV - CHART NO. 3

2009 Gallet and Assoicates

Geotechnical Boring Logs and Lab Data



REQUIRED LEGEND

⊕ BORING LOCATION

Gallet & ASSOCIATES

LEGEND

FIGURE 1
BORING LOCATION PLAN

SCALE: NOT TO SCALE

PROJECT

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO.: 09BHGRE0201G

Gallet & ASSOCIATES

LOG OF BORING B-1

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled	: April 20, 2009	Boring Depth	: 5 feet
Engineer	: Eric Olsen		
Driller	: Prodrill		
Drilling Method	: Continuous Flight Auger with Manual Hammer		
Water Level	: Not Encountered		

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				6 inches ASPHALT						
				Lean clay FILL brown, moist, very stiff with some wood	10 10 9	19				
				Sandy lean CLAY (CL), orange-brown, moist, stiff.	4 4 5	9	17.4	30	15	15
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-2

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled	: April 20, 2009	Boring Depth	: 5 feet
Engineer	: Eric Olsen		
Driller	: Prodrill		
Drilling Method	: Continuous Flight Auger with Manual Hammer		
Water Level	: Not Encountered		

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				5 inches ASPHALT						
				Foundry sand FILL with trace slag and coal black, moist, loose.	10 4 5	9				
				Sandy lean CLAY (CL), tan, moist, stiff.	4 4 5	9	20.0			
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-3

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled : April 20, 2009
Engineer : Eric Olsen
Driller : Prodrill
Drilling Method : Continuous Flight Auger with Manual Hammer
Water Level : Not Encountered
Boring Depth : 5 feet

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Lean clay FILL mixed with foundry sand and gravel black to brown, moist, medium stiff.	3 5 3	8				
				Sandy lean CLAY (CL), tan, moist, medium stiff.	2 2 6	8	22.3			
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-5

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled : April 21, 2009 Boring Depth : 5 feet
Engineer : Eric Olsen
Driller : Prodrill
Drilling Method : Continuous Flight Auger with Manual Hammer
Water Level : Not Encountered

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Clayey SAND (SC), tan, moist, medium dense.	5 10 4	14				
				Sandy lean CLAY (CL), tan, moist, stiff.	3 5 6	11	19.4			
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-6

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled	: April 20, 2009	Boring Depth	: 5 feet
Engineer	: Eric Olsen		
Driller	: Prodrill		
Drilling Method	: Continuous Flight Auger with Manual Hammer		
Water Level	: Not Encountered		

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Foundry sand FILL with trace slag and coal black, moist, medium dense	9 10 6	16	10.3			
5					1 50/1	50+				
				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-8

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled	: April 20, 2009	Boring Depth	: 5 feet
Engineer	: Eric Olsen		
Driller	: Prodrill		
Drilling Method	: Continuous Flight Auger with Manual Hammer		
Water Level	: Not Encountered		

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Sandy lean CLAY (CL), tan, moist, medium stiff.	3 3 4	7	18.5	27	11	16
				Becomes very stiff.	9 10 14	24				
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-9

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled : April 20, 2009
Engineer : Eric Olsen
Driller : Prodrill
Drilling Method : Continuous Flight Auger with Manual Hammer
Water Level : Not Encountered
Boring Depth : 5 feet

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Foundry sand FILL with trace slag and coal black, moist, dense.	5 10 21	31				
				Sandy lean CLAY (CL), tan, moist, medium stiff.	4 3 4	7	19.5			
5				Boring terminated at 5 feet.						
10										
15										
20										
25										
30										

Gallet & ASSOCIATES

LOG OF BORING B-11

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled : April 21, 2009 Boring Depth : 30 feet
Engineer : Eric Olsen
Driller : Prodrill
Drilling Method : Continuous Flight Auger with Manual Hammer
Water Level : 13 feet

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N--Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				SAND (SW), brown, damp, loose.	4 2 4	6				
				Sandy lean CLAY (CL), tan, moist, medium stiff to stiff. C = 1.0 ksf ϕ = 28° k = 200 pci ε_{50} = 0.007 in/in γ = 120 pcf	1 2 5	7	15.7	28	14	14
5					5 5 10	15				
		▼		SAND (SP), tan, damp to wet, medium dense to dense. C = Ø ksf ϕ = 32° k = 90 pci ε_{50} = Ø in/in γ = 120 pcf or γ_{buoy} = 57.6 pcf	4 5 6	11				
10										
15					3 8 9	17				
				CHALK, gray, moist, very hard. (ML/MH) C = 2.0 ksf ϕ = 22° horizontal subgrade Modulus, k = 600 pci ε_{50} = 0.004 in/in use at the same time	18 50/6	50+				
20										
25					50/2	50+				
30					50/6	50+				
				Boring terminated at 30 feet.						

Gallet & ASSOCIATES

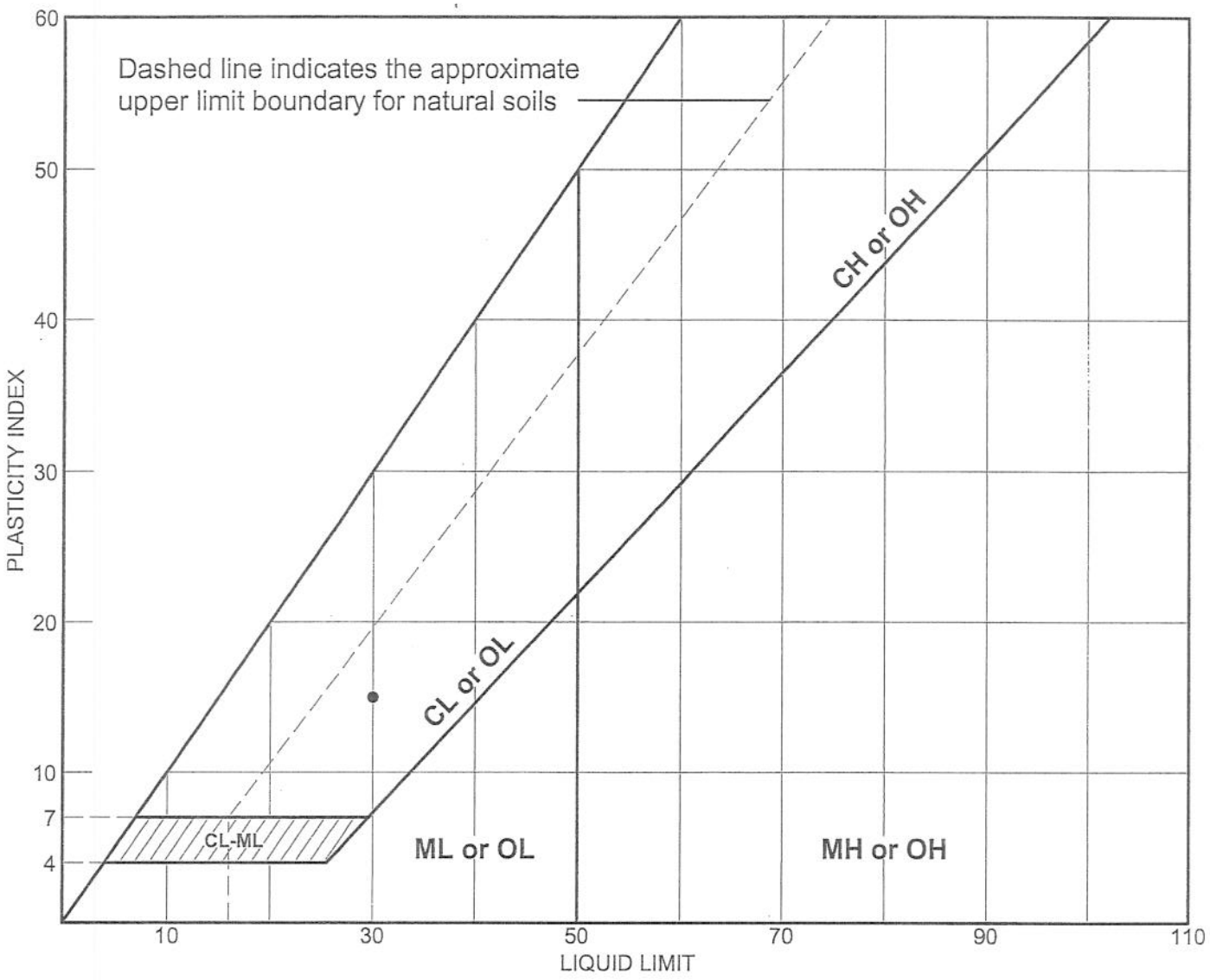
LOG OF BORING B-12

GEOTECHNICAL EXPLORATION
SELMA MULTI-USE RIVERFRONT
WALKING AND BICYCLE TRAIL
SELMA, ALABAMA
GAI PROJECT NO. 09BHGRE0201G

Date Drilled : April 21, 2009 Boring Depth : 30 feet
Engineer : Eric Olsen
Driller : Prodrill
Drilling Method : Continuous Flight Auger with Manual Hammer
Water Level : 13 feet

Depth in Feet	Surf. Elev.	Water Level	GRAPHIC	DESCRIPTION	Blow Count	N-Value	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
0				8-10 inches TOPSOIL						
				Sandy lean clay FILL, brown, moist, medium stiff to soft, with trace organics, slag, and coal	3 3 3	6				
					1 1 3	4	17.0			
5				Sandy lean clay FILL, grayish brown, moist, stiff, with trace organics, slag, and coal	3 6 9	15				
				SAND (SW), tan, damp, medium dense, with trace river gravel.	8 12 15	27				
10		▼								
				SILT (ML), tan, very moist, soft.	5 2 2	4				
15										
				CHALK, gray, moist, very hard.	42 50/6	50+				
20										
					50/5	50+				
25										
					50/6	50+				
30				Boring terminated at 30 feet.						

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Borings	B1/2		17.4	15	30	15	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

GALLET & ASSOCIATES

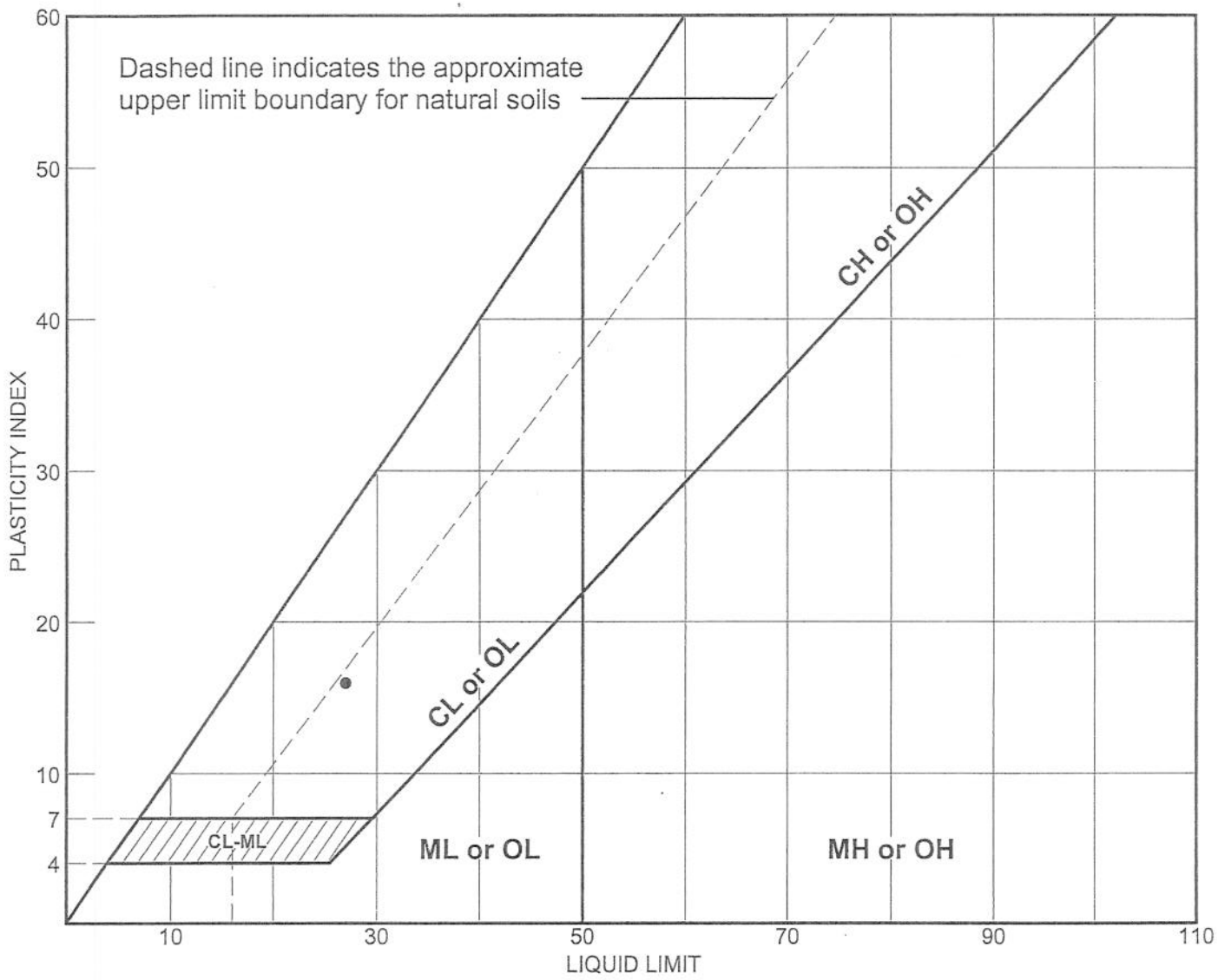
Client:

Project: Selma Multi Use Riverfront Trail

Project No.: 09BHGRE0201G

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Borings	B8/1		18.5	11	27	16	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

GALLET & ASSOCIATES

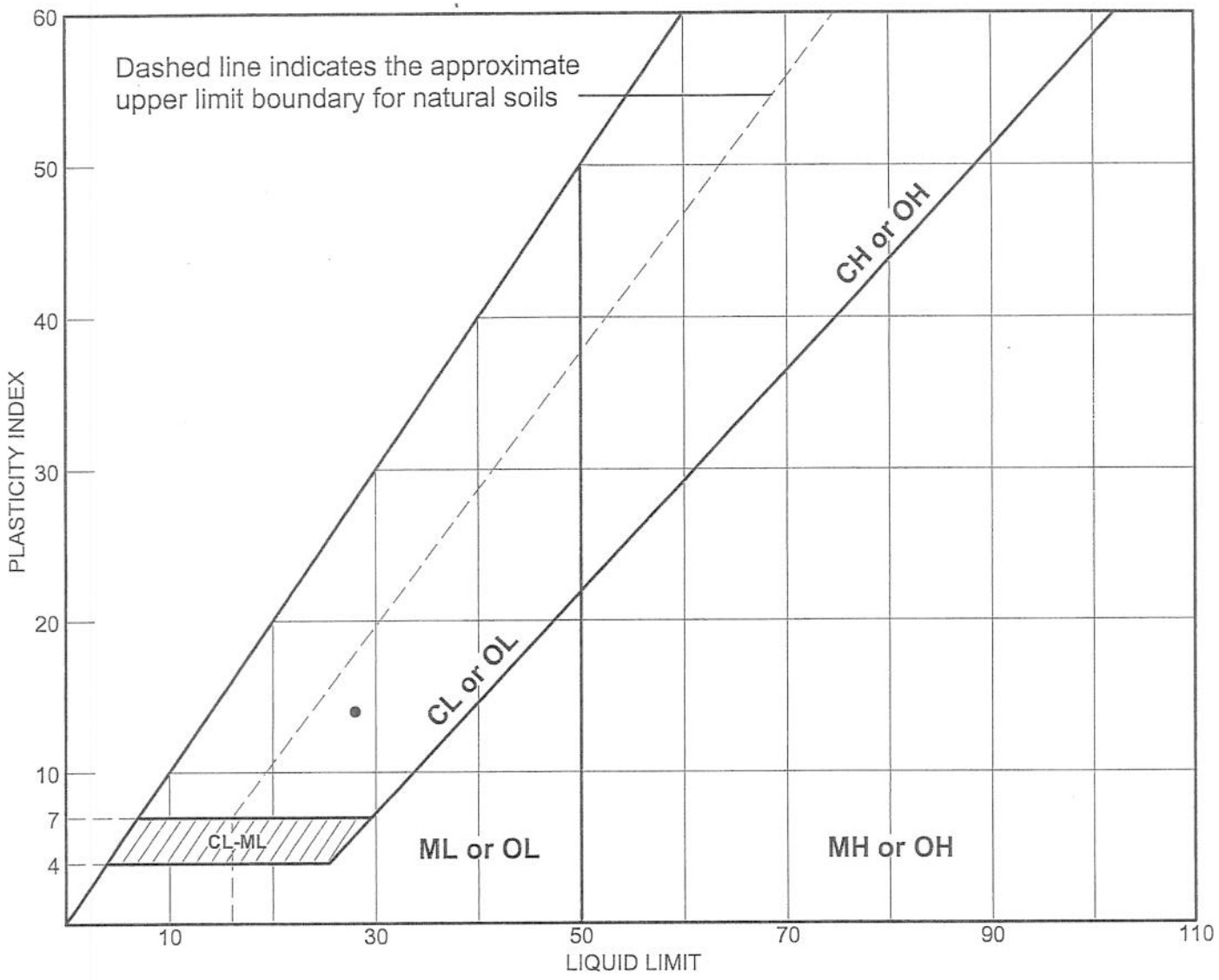
Client:

Project: Selma Multi Use Riverfront Trail

Project No.: 09BHGRE0201G

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Borings	B11/2		15.7	14	28	14	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

GALLET & ASSOCIATES

Client:

Project: Selma Multi Use Riverfront Trail

Project No.: 09BHGRE0201G

Figure

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL- SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND–SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS W/ HIGH PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY SANDS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PI	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Shear Strength, psf
Confining Pressure, psf

Consol	–	Consolidation	*Tx	320	(2500)	Unconsolidated Undrained Triaxial
LL	–	Liquid Limit (in %)	TxCU	320	(2600)	Consolidated Undrained Triaxial
PL	–	Plastic Limit (in %)	DS	2750	(2000)	Consolidated Drained Direct Shear
Gs	–	Specific Gravity	FVS	470		Field Vane Shear
SA	–	Sieve Analysis	PPR	2000		Pocket Penetrometer Reading

■ Undisturbed Sample

☒ Bulk Sample

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated
(2) * Indicates 1.4" diameter sample

KEY TO TEST DATA

PLATE

Gallet & ASSOCIATES, INC.

DRAWN	JOB NUMBER	APPROVED BY	DATE	REVISED	DATE